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A GLOBAL INDUSTRY...

THE DATAMATION 100

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FEATURES

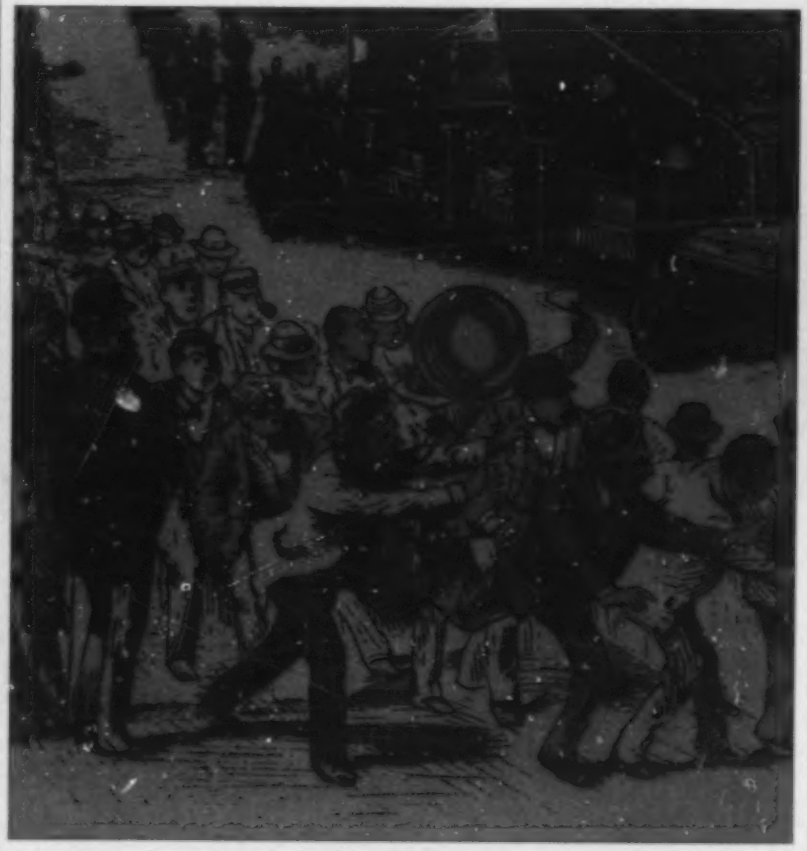
22
IN FOCUS
IBM is plotting to solidify and increase its control of customers' computing and communications infrastructures and to gain control over the structure of worldwide networks, writes Angeline Pantages as she looks "Beyond Today's Blue."

36
A GLOBAL INDUSTRY... THE DATAMATION 100
John W. Verity
The year 1984 was a year of mergers and partnerships, of oppressively strong American dollars and unsteady economies, of soaring microprocessors and peaking microcomputers, of a newly divested AT&T entering the vendor market. It was a year the Top 100 worldwide dp companies pulled in $132 billion.

50
RANKING OF THE TOP 100
For the first time, our annual listing is a comprehensive ranking of dp companies throughout the world.

58
COMPANY PROFILES
The memorable mergers, stunning successes, phenomenal failures, and impressive profits of the Top 100.

186
ALLIANCES, NETWORKS, AND INTERNATIONAL COMPETITION
Michael Borrus and John Zysman
In the worldwide information industry, nationalism can be as significant a force as any technology, say two experts.



DEPARTMENTS

9 **LOOK AHEAD**
15 **LETTERS**
19 **EDITORIAL**
184 **MARKETPLACE**
196 **ADVERTISERS' INDEX**

INTERNATIONAL 32-1

- 5 **MAKING MARRIAGES WORK**
-15 **JAPAN'S CHINA CONNECTION**
-23 **THE EUROPEAN EFFORT**

COVER PHOTOGRAPH BY WALTER WICK/ MODEL BY MARK YURKIW

A GLOBAL INDUSTRY...
THE DATAMATION
100

For the first time anywhere . . . a comprehensive ranking of data processing companies worldwide.

by Pamela Archbold and John Verity

The year 1984 turned out to be a rather mixed bag for the global data processing industry. At first it enjoyed the U.S. economy's mild upturn, but it ended up staring into a dim-looking 1985. Data processing revenues in 1984 for the DATAMATION 100 companies, which include the revenues of non-U.S. companies for the first time, totaled $132 billion.

This year, the DATAMATION 100 comprises—for the first time anywhere—a comprehensive ranking of data processing companies located throughout the world. It combines previously separate U.S. and non-U.S. (European and Japanese) listings and marks a new beginning for the DATAMATION 100. Because 28 non-U.S.-based companies have entered the DATAMATION 100 ranks, just as many U.S. companies were eliminated. We have included a separate chart of the top 100 U.S. dp companies. (Only four U.S. companies made the list for the first time this year: Lotus Development Corp. at number 100, General DataComm Industries at number 97, Apollo Computer at number 80, and Zenith Electronics at number 75.)

While the number one company, IBM, showed total data processing revenues of $44.2 billion, the number 100 company, Lotus Development Corp., came in at $157 million. (In last year's listing, dp revenues ranged from IBM's $35.6 billion to Mead Corp.'s $94.5 million.) Almost 30% of the DATAMATION 100 showed data processing revenues of more than a billion dollars.

Not surprisingly, the fastest growth last year came primarily to microcomputer and small computer vendors, some of which virtually tripled their revenues (see Fig. 5). Of the 10 highest revenue growth companies—which include Lotus Development, Compaq, Apollo, Martin Marietta Corp., Telex Corp., and Apple Computer Corp.—six were heavily involved in micro-related markets. By year's end, however, good news for micro makers had begun to be more rare. Growth in the microcomputer market suddenly reached a plateau late in 1984 and the year witnessed the beginnings of a shakeout that continues today. Not only did the home computer market continue to fade, as seen in IBM's troubles with PCjr and Coleco's sluggish sales of Adam, but the all-important corporate pc market began to show signs of leveling after several years of staggering growth. Apple,

PHOTOGRAPH BY WALTER WICK/MODEL BY MARK YURKIW

number 14 this year with dp revenues of $1.89 billion, introduced its Macintosh computer in early 1984, saw the machine gain rapid acceptance at colleges and with individual buyers, but faced a great challenge in selling it to business customers.

Except for some robust firms whose products continue to be popular, pc software vendors seemed to be hit hard and many folded their tents altogether or sold out to larger, more successful competitors. No doubt that trend will continue, particularly as IBM has now signaled its intentions to grab a major piece of the pc software market.

AT&T made its debut in the computer market. It introduced a personal computer made by Olivetti, unveiled a series of minicomputers built by the former Western Electric operation, and tried to rally as many competitors as it could around the flag of the Unix operating system. While the telephone company's efforts didn't rock the computer industry—hardly a tremor was felt—AT&T was spoken of as a player from which further news is sure to come.

BIG BLUE REAFFIRMS ITS LEAD

IBM, on the other hand, reaffirmed its strength in the market by expanding most product lines and preparing the marketplace for its early-1985 introduction of the Sierra mainframes and double-capacity 3380 disk drives. The company also introduced the PC AT, a personal computer that came into the market with a bang last summer but ended up running into severe delivery problems. After a slow start for the PCjr, price cuts and a new keyboard helped that home computer gain sales during the Christmas season, but subsequent sales were so slack the machine was taken off the market.

The divestiture of AT&T evidently created opportunities for data communications companies in 1984, which generally showed significantly increased revenues over the previous year. General DataComm Industries, for instance, entered the DATAMATION 100 for the first time at number 98 on the strength of 1984 revenues of $161.2 million, up 67%. Micom Systems Inc., at number 93 this year, saw revenues rise 50.7% to $171.4 million.

Another high-growth area is computer aided design and manufacturing, or CAD/CAM. The hands-down growth winner in this market was Intergraph, which at number 52 showed CAD/CAM revenues of $363.4 million, up 60% from the year before. It was followed by McDonnell Douglas and Control Data, each of which had CAD/CAM revenues of $102 million, both having grown more than 46%. The biggest

FIG. 1
THE TOP 10 IN MAINFRAMES

DTM 100 RANK	COMPANY	1984 REVS. ($ MIL.)	1983 REVS. ($ MIL.)	% CHANGE
1	IBM	13,131.0	11,443.6	14.7
7	Sperry Corp.	1,451.1	1,300.9	11.5
3	Burroughs Corp.	1,450.0	1,300.0	11.5
6	Fujitsu Ltd.	1,399.7	1,050.0	33.3*
5	NCR Corp.	1,345.0	1,000.0	34.5
9	NEC Corp.	913.8	776.7	17.7*
4	Control Data Corp.	813.0	775.0	4.9
10	Siemens AG	807.0	686.0	17.6*
12	Hitachi Ltd.	771.8	679.2	13.6*
15	Honeywell Inc.	665.0	630.0	5.5

*In actual accounting currencies, Fujitsu mainframe revenues were up 25% to Y249.38 billion; NEC mainframe revenues were up 15% to Y184.51 billion; Hitachi mainframe revenues were up 13.6% to Y161.31 billion; Siemens mainframe revenues were up 17.9% to DM2.30 billion.

FIG. 2
THE TOP 10 IN MINICOMPUTERS

DTM 100 RANK	COMPANY	1984 REVS. ($ MIL.)	1983 REVS. ($ MIL.)	% CHANGE
1	IBM	3,000.0	2,627.0	14.1
2	Digital Equipment Corp.	1,527.0	1,000.0	52.7
11	Wang Laboratories Inc.	970.0	892.9	8.6
8	Hewlett-Packard Co.	950.0	735.3	29.1
19	Data General Corp.	840.0	706.0	18.9
3	Burroughs Corp.	700.0	650.0	7.6
13	Ing. C. Olivetti & Co. S.P.A.	540.1	490.5	10.1*
40	Prime Computer Inc.	479.1	416.5	15.0
45	Tandem Computers Inc.	477.1	387.4	23.1
22	Toshiba Corp.	421.0	378.9	11.1*

*In actual accounting currencies, Olivetti mini revenues were up 27.4% to £949 billion; Toshiba mini revenues were up 11% to Y100 billion.

FIG. 3
THE TOP 10 IN MICROCOMPUTERS

DTM 100 RANK	COMPANY	1984 REVS. ($ MIL.)	1983 REVS. ($ MIL.)	% CHANGE
1	IBM	4,000.0	2,600.0	53.8
14	Apple Computer Inc.	1,897.9	1,084.7	74.9
23	Commodore International Ltd.	1,129.5	926.7	21.8
8	Hewlett-Packard Co.	510.0	399.4	27.7
7	Sperry Corp.	503.4	386.4	30.2
38	Tandy Corp.	402.8	568.2	-29.1
57	Convergent Technologies Inc.	361.7	163.2	121.6
61	Compaq Computer Corp.	329.0	111.2	195.8
13	Ing. C. Olivetti & Co. S.P.A.	289.6	252.1	14.8*
9	NEC Corp.	258.9	199.9	30.0*

*In actual accounting currencies, Olivetti micro revenues were up 32.8% to £508.8 billion; NEC micro revenues were up 30% to Y6.15 billion.

FIG. 4

THE TOP 10 IN COMPUTER SERVICES

DTM 100 RANK	COMPANY	1984 REVS. ($ MIL.)	1983 REVS. ($ MIL.)	% CHANGE
29	Automatic Data Processing	958.3	816.4	17.3
4	Control Data Corp.	930.5	1,030.0	−9.6
35	General Motors Corp.	786.1	718.8	9.3
31	General Electric Co.	725.0	600.0	20.8
39	Computer Sciences Corp.	709.6	718.9	−1.2
28	McDonnell Douglas Corp.	608.0	524.6	15.8
58	Martin Marietta Corp.	361.5	154.0	134.7
71	Boeing Co.	260.0	250.0	4.0
82	Cap Gemini Sogeti	206.0	183.7	12.1*
1	IBM	200.0	175.0	14.3

*In actual accounting currency, Cap Gemini Sogeti services revenues were up 28.6% to FF1.4 billion.

FIG. 5

GROWTH SPURTS

The 10 largest increases in dp revenues

DTM 100 RANK	COMPANY	% CHANGE	1984 REVS. ($ MIL.)	1983 REVS. ($ MIL.)
100	Lotus Development Corp.	196.2	157.0	53.0
61	Compaq Computer Corp.	195.8	329.0	111.2
80	Apollo Computer	167.5	215.9	80.7
58	Martin Marietta Data Systems	134.7	361.5	154.0
57	Convergent Technologies	121.6	361.7	163.2
50	Telex Corp.	99.6	442.7	221.7
14	Apple Computer Inc.	74.9	1,897.9	1,084.7
98	General DataComm Industries	67.3	161.2	96.3
52	Intergraph Corp.	60.2	403.8	252.0
96	Norsk Data AS	53.7*	166.7	121.2

*Percent measured in local currency, up to Kr1,360 million from Kr885 million.

FIG. 6

STUNTED GROWTH

Companies with negative revenue growth

DTM 100 RANK	COMPANY	% CHANGE IN LOCAL CURRENCY	1984 DP REVS. ($ MIL.)	1983 DP REVS. ($ MIL.)
38	Tandy Corp.	−23.9	719.1	945.0
51	Racal Corp.	−10.9*	412.0	525.8
34	Storage Technology	−8.8	808.6	886.6
95	CPT Corp.	−7.3	168.4	181.7
56	Mohawk Data Sciences	−4.1	366.0	382.0
97	Televideo Systems Inc.	−3.3	163.0	168.7
39	Computer Sciences Corp.	−1.2	709.6	718.9

*Percent decline is calculated in actual accounting currency. Calculated in dollars, Racal revenue was down 21.6%.

company in the CAD/CAM niche, however, remains Computervision Corp., with CAD/CAM revenues of $461 million.

It is nevertheless the traditional mainframe companies that still dominate the industry and the DATAMATION 100: IBM, its plug-compatible rivals, and the BUNCH companies (Burroughs, Sperry, NCR, Control Data, and Honeywell) all rank within the top 15. In fact, among the top 15 companies, only Digital Equipment Corp. (number 2), Hewlett-Packard (number 8), Wang Laboratories (number 11), and Apple (number 14) are best known for small systems.

In the mainframe market, IBM strengthened its position at the expense of traditional systems rivals (see "Up, Up, and Away," May 15, p. 32) and the plug-compatible vendors. Many competitors were forced to seek protection in relatively sheltered niche markets.

FEWER COMPANIES SHOW RED Nineteen of the top 100 data processing firms showed declines in total 1984 earnings compared with the year before, and nine showed actual losses (see Figs. 6 and 7). This compares favorably with 1982 and 1983, when the industry was in the midst of a recession and far more companies showed red ink.

For consistency's sake, non-U.S. companies have been compared with U.S. firms after revenues and earnings were converted from local currencies to dollars. The conversions are based on exchange rates for the appropriate time periods supplied by the Organization for Economic Cooperation and Development. Because of the dollar's wide swing in value during the year, the currency translations often hide actual growth rates. Therefore, in order to show actual as well as dollar-based growth, each non-U.S. supplier's dp revenue results have been listed in its actual accounting currency as well as in dollars on the DATAMATION 100 chart. A separate chart, Fig. 9, lists these non-U.S. companies and shows their dp growth rates in local currencies.

The dollar's recent strength has helped depress U.S. companies' sales abroad while boosting those of non-U.S. suppliers. As the dollar grew even stronger in the early months of 1985, several U.S. companies, including IBM, reported flat earnings. Meanwhile, the U.S. economy's growth of 1984 began to falter, forcing many suppliers—Wang Labs, Apple, and Honeywell, among others—to shut down production lines and put workers on furlough. The outlook for the rest of 1985 seems questionable at best.

As for major news, 1984 may be re-

membered for several events. A newly divested AT&T entered the merchant computer business. The IBM-compatible peripherals market crumbled further than ever. Dr. Gene Amdahl's ambitious, deep-pocketed Trilogy project failed to deliver a 370-compatible mainframe. And late in the year, the bloom began to fade from the once-booming personal computer market. It was also a year for big mergers and acquisitions: IBM captured Rolm, General Motors bought Electronic Data Systems, McDonnell Douglas pulled in Tymshare, and Telex acquired what was left of Raytheon Data Systems after it dropped out of the 3270 terminal market. Meanwhile, in the non-U.S. arena, AT&T pumped $260 million into Olivetti for a 25% equity holding, Standard Telephones and Cable acquired British mainframer ICL, Fujitsu gained a 51% interest in Amdahl Corp., and Thorn EMI paid $133 million for chip maker Inmos. Thorn EMI also boosted its software holdings by acquiring EPS Consultants.

SOME ARM LINKING OCCURS

When not acquiring each other, the world's data processing companies also spent a good deal of time linking arms to jointly develop and market computers. Many of those links crossed national borders, and some entire oceans. Amdahl Corp., for instance, began selling Fujitsu's supercomputers, ICL jointly developed a machine with the same Japanese company, Honeywell topped off its mainframe line with a NEC product, and Sperry reached into several other companies to bolster its small computer lines. AT&T took on the Olivetti pc, Harris slapped its label on MassComp workstations, and a handful of companies were seen selling Convergent Technologies' workstation and minicomputer products. N.V. Philips of the Netherlands teamed up with Control Data to work on optical mass storage devices, while Dataproducts joined with Grupo Latino Mexicano to build printers for the Mexican market.

Due to the diversified nature of computing and communications, the year also saw many reorganizations as companies strove to adapt to changing market structures. Siemens, Mannesmann Kienzle, Datapoint, McDonnell Douglas, Sperry, General DataComm, and Digital Equipment are just some of the companies that regrouped.

The biggest loss was shown by Storage Technology, the Louisville, Colo., maker of plug-compatible peripherals, which found 1984 to be its worst year ever. Forced to write off numerous activities and file for Chapter 11 protection after a series of management blunders and shifting market conditions, StorageTek showed a loss of $505.5 million for the year. The company is still struggling to regain stability. Also hurting in the IBM-compatible peripherals sector was Control Data, which pulled out of the 370-type disk market and moved to stem losses in the oem disk sector. Once a powerhouse in the peripherals industry, CDC struggled last year to maintain profitability (earnings declined by 80% from 1983).

Other companies showing outright losses for the year were Mohawk Data Sciences, losing $120.9 million; Groupe Bull, losing $55.9 million; Dysan, losing $49.9 million; Convergent Technologies, losing $13.8 million; and Datapoint, losing $900,000 (see Fig. 7).

The year was also one of substantial gains in revenues and earnings for certain companies. Lotus Development Corp., the Cambridge, Mass., supplier of microcomputer software, made it to the DATAMATION 100 for the first time this year with dp revenues skyrocketing by 196% to $157 million from $53 million in 1983. Another microcomputer player, Compaq Corp., had an equally steep increase, showing revenues of $329 million in its second year of business, up 195.8% from 1983's $111 million, winding up at number 61. Zenith Electronics Corp. entered the list at number 75 on the quietly growing strength of its personal computer business; its dp revenues were $249 million in 1984, up 46% from the year before.

FIG. 8

HEARTY WORKERS

The top 10 in dp revenues per employee

DTM 100 RANK	COMPANY	REVS. PER EMPL ($ THOU)	1984 DP REVS. ($ MIL.)	1984 EMPLS
61	Compaq Computer Corp.	235.0	329.0	1,400
57	Convergent Technologies	212.8	361.7	1,700
97	Televideo Systems, Inc.	132.2	163.0	1,233
53	Tandon Corp.	113.9	398.5	3,500
1	IBM	112.2*	44,292.0	394,930
36	Amdahl Corp.	111.3	779.4	7,000
85	Quotron Systems Inc.	110.0	189.8	1,725
45	Tandem Computers Inc.	108.3	565.9	5,223
77	Cray Research Inc.	103.9	228.8	2,203
95	CPT Corp.	91.7	256.8	2,800

*Because IBM receives an estimated 3.8% of its total revenues from nondp business, its dp productivity is assumed to be slightly higher. The other companies on the chart derive 100% of their total revenues from dp.

FIG. 7

HONOR WITHOUT PROFITS

The dp companies in the DATAMATION 100 that lost money in 1984

DTM 100 RANK	COMPANY	1984 EARNINGS LOSS ($ MIL.)
34	Storage Technology Corp.	505.5
56	Mohawk Data Sciences Corp.	120.9
16	Groupe Bull	55.9*
81	Dysan Corp.	49.9
68	Mitel Corp.	24.4**
57	Convergent Technologies Corp.	13.8
91	CISI	11.5***
92	Centronics Data Computer Corp.	4.5
44	Datapoint Corp.	.9

*A F486.6 million loss
**A C$32.1 million loss
***A F100.5 million loss

Bridalveil Fall, Yosemite National Park, California c. 1927
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It is the traditional mainframe companies that still dominate the industry and the DATAMATION 100.

FIG. 9

BEYOND THE DOLLAR

Change in dp revenues of non-U.S. companies in actual accounting currencies

DTM 100 RANK	COMPANY	% CHNG.	1984 DP REVS. (MIL.)	1983 DP REVS. (MIL.)	COUNTRY
96	Norsk Data AS	53.6	Kr1,360.0	885.0	NORW
10	Siemens AG	42.4	DM7,950.0	5,582.0	GERM
90	Scicon Int.	41.3	£130.0	92.0	U.K.
69	Ferranti PLC	36.1	£199.5	146.5	U.K.
22	Toshiba Corp.	31.7	Y270,000.0	205,000.0	JAPAN
65	Ricoh Co. Ltd.	30.0	Y68,900.0	53,000.0	JAPAN
12	Hitachi Ltd.	29.4	Y522,500.0	403,750.0	JAPAN
87	Nokia Electronics	28.8	MK1,086.0	843.0	FINL
82	Cap Gemini Sogeti	28.5	FF1,800.0	1,400.0	FRAN
13	Olivetti & Co.	28.0	L3,535,700.0	2,758,959.7	ITALY
59	Thorn-EMI PLC	25.2	£260.0	207.6	U.K.
6	Fujitsu Ltd.	25.0	Y831,250.0	665,000.0	JAPAN
24	L.M. Ericsson	24.6	SKr9,290.0	7,450.0	SWED
9	NEC Corp.	21.7	Y665,000.0	546,012.5	JAPAN
63	BASF	21.4	DM850.0	700.0	GERM
60	Mannesman Kienzle	21.3	DM977.6	805.8	GERM
21	Nixdorf Computer AG	20.6	DM3,270.0	2,710.0	GERM
16	Groupe Bull	16.8	FF13,596.0	11,639.0	FRAN
33	Mitsubishi Electric Corp.	16.7	Y194,078.4	166,250.0	JAPAN
91	CISI	16.0	FF1,500.0	1,293.0	FRAN
68	Mitel	15.6	C$366.6	317.1	CAN
42	Triumph Adler	15.0	DM1,800.0	1,565.0	GERM
64	Plessey Co.	14.8	£217.5	189.4	U.K.
27	Northern Telecom	13.8	C$1,381.6	1,214.5	CAN
25	N.V. Philips	12.1	F3,499.9	3,120.0	NETH
20	ICL Ltd.	8.3	£917.0	846.5	U.K.
30	Oki Electric Industry Co.	20.0	Y213,750.0	178,125.0	JAPAN
51	Racal PLC	–10.9	£309.0	347.0	U.K.

In terms of data processing revenues per employee, a rough measure of corporate efficiency, personal computer maker Compaq topped the list with $235,000 generated by each of its 1,400 people. Next were Convergent Technologies, Televideo Systems Inc., Tandon Corp., and IBM Corp., with a range of from $212,000 to $112,000 per head (see Fig. 8).

Not surprisingly, IBM headed the list of top mainframe revenue producers with a total take of $13.13 billion, up 14.7% from the previous year. It was followed by Sperry with $1.45 billion, Burroughs with $1.45 billion, and Fujitsu Ltd. with $1.39 billion.

In microcomputer-related revenues, IBM was also tops, checking in with an estimated total of $4 billion, up 53.8% from the previous survey's figure of $2.6 billion. Apple followed at $1.89 billion.

A total of 28 non-U.S. companies joined the list. As might be expected, the newly added players are based in Japan and

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The year 1984 saw many reorganizations as companies strove to adapt to changing market structures.

METHODOLOGY

Thoughout the year, DATAMATION tracks over 200 companies on a worldwide basis. Our survey is meant to be used as a comparative analysis, and therefore all revenues and earnings figures have been adjusted to calendar year calculations. Because over half of the companies covered operate on a fiscal year that does not coincide with the calendar year, their revenues and earnings for purposes of this survey have been derived from quarterly reports. DATAMATION has listed total net income in all cases, not income from continuing operations. Numbers relating to research and development expenditures and total number of employees, however, are reported as of each company's fiscal year-end.

During 1984, a number of DATAMATION 100 companies restated their performance figures, whether to reflect changed acounting methods, mergers, spinoffs, or just plain errors in earlier reports. Each chart and table within the survey incorporates the restated numbers.

Also, note that a company's internal sales, or sales made to other divisions or units within the company, are excluded from the year's total data processing revenues, as they are considered captive and not commercial sales.

In cases where a company has not explicitly stated dp revenues, DATAMATION has estimated the figures based on industry trends and knowledge.

For purposes of the survey, dp-related revenue is defined as general purpose dp products and services generated by one or more of the following categories of equipment: mainframes, minicomputers, microcomputers, office systems, data communications, peripherals and terminals, software and services, and maintenance and repair. Explicitly excluded are data transmission or "basic" services revenues from specialized common carriers; standalone electronic and mag card typewriters and standalone electronic cash registers; instrumentation; semiconductors; printed circuit boards; automatic test equipment; and dp supplies, with the exception of magnetic media for disk and tape drives. All peripherals that attach to a system are included. For computer-based manufacturing systems, such as computer-controlled machine tools, only the computer and hardcopy output devices are included and not the tools themselves.

Since non-U.S. companies have been included in the survey for the first time, simple comparisons of this year's rankings with those of last year and earlier are not valid.

Europe. They entered the rankings at all levels but came in primarily at the high end, where the U.S.-based BUNCH companies are found.

The largest non-U.S. company in the DATAMATION 100 is Fujitsu Ltd., the Japanese maker of IBM-compatible mainframes and owner of a controlling interest in Amdahl Corp. At number six, Fujitsu had estimated dp revenues of $3.49 billion in 1984, up 24.9% from the previous year. The second largest non-U.S. company is another Japanese manufacturer, Nippon Electric Corp., which at number nine showed estimated dp revenues of $2.79 billion. The next is Siemens AG of West Germany, which at number 10 had estimated dp revenues of $2.78 billion in 1984.

Figured in terms of actual accounting currencies, the three non-U.S. companies showing the best growth were Norsk Data AS of Norway, number 96 (up 53.6% to Kr1.36 billion); Siemens of West Germany, number 10 (up 42.4% to DM7.95 billion); and Scicon International Ltd. (up 41.3% to £130 million). For numbers on the rest of non-U.S. company growth, see Fig. 9.

Software and services companies were to be found in only eight slots in this year's rankings, compared with 13 last year. The largest services company this year was once again Automatic Data Processing, at number 29, which recorded revenues of $958 million for the year. Next largest was Electronic Data Systems, which was purchased last year by General Motors, with revenues of $786 million and berth number 35. It was followed closely by Computer Sciences Corp., number 39, which saw revenues slip by 1.2% from 1983 and end up at $709 million. The two fastest growing services companies were Xerox Corp. and Continental Telephone Inc., which each saw revenues rise 38.4% over 1983 (see Fig. 4). The biggest loser in this category was Control Data, whose scientific and engineering-oriented services dropped 9.6% in revenues during the year. CDC's other businesses also suffered hard times last year.

Evidently, the remote computing services business is not the growth area it used to be and, despite much talk of the importance of software, "pure" software vendors have yet to achieve revenues comparable to those shown by hardware manufacturers.

THE DATAMATION 100

THE LEADING WORLDWIDE DP COMPANIES

1984 RANK	1983 RANK	COMPANY	1984 TOTAL REVENUE	1984 DP REVENUE	1983 DP REVENUE	DP REV % CHG
1	1	International Business Machines	$45,937.0	$44,282.0	$36,503.0	21.3
2	2	Digital Equipment Corp.	6,230.0	6,230.0	4,826.9	29.0
3	3	Burroughs Corp.	4,875.6	4,500.0	4,000.0	12.5
4	4	Control Data Corp.	5,026.9	3,755.5	3,507.9	7.0
5	5	NCR Corp.	4,074.3	3,670.0	3,333.2	10.1
6		Fujitsu Ltd.	6,440.7	3,499.3	2,800.0	24.9
7	6	Sperry Corp.	5,370.0	3,473.9	3,071.8	13.0
8	7	Hewlett-Packard Co.	6,297.0	3,400.0	2,496.0	36.2
9		NEC Corp.	7,594.3	2,799.4	2,299.0	21.7
10		Siemens AG	16,076.8	2,789.5	2,189.0	27.4
11	8	Wang Laboratories Inc.	2,421.1	2,420.7	1,792.9	35.0
12		Hitachi Ltd.	21,048.2	2,199.5	1,700.0	29.3
13		Ing. C. Olivetti & Co. S.P.A.	2,891.9	2,012.4	1,816.3	10.7
14	11	Apple Computer Corp.	1,897.9	1,897.9	1,084.7	74.9
15	9	Honeywell Inc.	6,073.6	1,825.0	1,666.0	9.5
16		Groupe Bull	1,555.6	1,555.6	1,527.4	1.8
17	10	Xerox Corp.	8,791.6	1,518.0	1,156.0	31.3
18	20	AT&T Co.	33,200.0	1,340.0	1,080.0	24.0
19	16	Data General Corp.	1,229.7	1,229.7	872.2	40.9
20		ICL	1,222.7	1,222.7	1,282.6	-4.6
21		Nixdorf Computer AG	1,147.4	1,147.4	1,062.7	7.9
22		Toshiba Corp.	13,891.8	1,136.6	863.2	31.6
23	14	Commodore International Ltd.	1,189.5	1,129.5	926.7	21.8
24		L.M. Ericsson	3,545.1	1,123.3	971.3	15.6
25	12	TRW Inc.	6,061.7	1,105.0	1,015.0	8.8
26		N.V. Philips Gloeilampenfabrieken	5,221.2	1,090.3	1,094.7	-0.4
27	21	Northern Telecom Inc.	3,330.0	1,050.0	923.0	13.7
28	29	McDonnell Douglas Corp.	9,662.6	982.8	781.8	25.7
29	19	Automatic Data Processing Inc.	958.3	958.3	816.4	17.3
30		Oki Electric Industry Co. Ltd.	1,738.6	899.8	750.0	19.8
31	18	General Electric Co.	27,950.0	865.0	820.0	5.4
32	17	Texas Instruments Inc.	5,741.6	860.0	800.0	7.5
33		Mitsubishi Electric Corp.	7,329.5	817.0	700.0	16.7
34	15	Storage Technology Corp.	808.0	808.0	886.6	-8.8
35	24	General Motors Corp.	83,889.9	786.1	718.8	9.3
36	22	Amdahl Corp.	779.4	779.4	777.7	0.2
37	26	Harris Corp.	2,187.7	730.0	580.0	25.8
38	13	Tandy Corp.	2,794.7	719.1	945.0	-23.9
39	23	Computer Sciences Corp.	709.6	709.6	718.9	-1.2
40	31	Prime Computer Inc.	642.8	642.8	516.5	24.4
41	25	ITT Corp.	12,700.9	640.0	600.0	6.6
42		Triumph Adler AG	807.0	631.6	613.7	2.9
43	32	Motorola Inc.	5,534.0	618.0	514.0	20.2
44	28	Datapoint Corp.	589.2	589.2	554.4	6.2
45	33	Tandem Computers Inc.	565.9	565.9	450.5	25.6
46	35	Computervision Corp.	556.3	556.3	400.4	38.9
47	34	National Semiconductor	1,818.0	550.0	425.0	29.4
48	41	Dataproducts Corp.	484.5	484.5	343.5	41.0
49	39	C. Itoh Electronics Inc.*	531.1	443.1	360.3	22.9
50	53	Telex Corp.	523.8	442.7	221.7	99.6

Ranking is by dp revenue in millions. NA: Not available. *Constitutes U.S. operations only.

DP AS % OF TOT	NONDOLLAR ACCTG CURRENCY 1984 DP	1983 DP	% CHG		1984 EMPL	R&D 1984	R&D % TOT	NET INCOME	FISCAL YEAR END
96.4					394,930	$4,200	9.1	$8,562.0	Dec.
100.0					88,600	630	10.1	487.0	June
92.3					65,000	274	5.8	244.9	Dec.
74.7					54,100	422	8.3	31.6	Dec.
90.0					62,000	288	7.0	342.6	Dec.
54.3	Y831,250.0	Y885,000.0	25.0	JAPAN	73,243	644	10.0	366.3	March
64.7					77,000	445	8.2	267.6	March
53.9					80,000	NA	NA	665.0	Dec.
36.8	Y665,000.0	Y546,012.5	21.8	JAPAN	78,369	387	5.1	187.6	March
17.3	DM7,950.0	DM5,582.0	42.4	W GER	319,000	1,333	8.2	374.0	Sept.
99.9					30,000	160	6.6	230.7	June
10.4	Y522,500.0	Y403,750.0	29.4	JAPAN	161,533	997	4.7	824.8	March
69.6	L3,535,700.0	L2,758,959.7	28.2	ITALY	47,800	202	7.0	168.1	Dec.
100.0					5,382	71	3.7	104.3	June
30.0					94,300	422	6.9	239.0	Dec.
100.0	FF13,596.0	FF11,639.0	16.8	FRANCE	26,435	161	10.3	-55.9	Dec.
17.2					103,457	561	6.3	290.5	Dec.
4.0					365,000	2,400	7.2	1,369.9	Dec.
100.0					17,695	101	8.2	78.4	Sept.
100.0	£917.0	£846.5	8.3	U.K.	15,167	NA	NA	40.3	Dec.
100.0	DM3,270.0	DM2,710.0	20.7	W GER	20,190	98	8.5	NA	Dec.
8.1	Y270,000.0	Y205,000.0	31.7	JAPAN	NA	628	4.5	374.7	March
94.9					NA	45	1.7	100.3	June
31.6	Skr9,290.0	Skr7,450.0	24.7	SWEDEN	70,000	NA	NA	NA	Dec.
18.2					93,524	146	2.4	266.8	Dec.
20.8	G3,499.0	G3,120.0	12.2	NETH	344,000	NA	NA	346.0	Dec.
31.5					47,000	328	9.8	241.0	Dec.
10.1					88,391	NA	NA	325.3	Dec.
100.0					17,500	NA	NA	79.4	June
51.7	Y213,750.0	Y178,125.0	20.0	JAPAN	17,800	77	4.4	42.1	March
3.0					NA	1,038	3.7	2,280.0	Dec.
14.9					86,563	691	12.0	316.0	Dec.
11.1	Y194,078.4	Y166,250.0	16.7	JAPAN	67,410	NA	NA	215.9	March
100.0					NA	NA	NA	-505.5	Dec.
.9					748,000	NA	NA	4,515.5	Dec.
100.0					7,000	125	18.0	36.4	Dec.
33.3					30,000	105	4.8	90.7	June
25.7					32,000	NA	NA	234.9	June
100.0					13,400	NA	NA	27.6	March
100.0					7,348	64	9.9	59.7	Dec.
5.0					252,000	974	7.6	448.0	Dec.
78.2	DM1,800.0	DM1,565.0	15.0	W GER	11,049	NA	NA	NA	Dec.
11.1					99,900	411	7.4	387.0	Dec.
100.0					8,431	46	7.9	-0.9	July
100.0					5,223	56	10.0	46.9	Sept.
100.0					6,500	60	10.9	41.4	Dec.
30.2					41,749	158	8.7	84.2	May
100.0					5,600	31	6.4	35.8	March
83.4					NA	NA	NA	NA	Dec.
84.5					5,862	21	4.1	47.6	March

THE DATAMATION 100

THE LEADING WORLDWIDE DP COMPANIES

1984 RANK	1983 RANK	COMPANY	1984 TOTAL REVENUE	1984 DP REVENUE	1983 DP REVENUE	DP REV % CHG
51		Racal Electronics PLC	$1,173.3	$412.0	$525.8	-21.6
52	47	Intergraph Corp.	403.8	403.8	252.0	60.2
53	40	Tandon Corp.	398.5	398.5	346.9	14.8
54	43	Tektronix Inc.	1,419.8	394.0	300.0	26.0
55	73	Diebold Inc.	474.1	374.1	345.9	8.1
56	38	Mohawk Data Sciences Corp.	382.0	396.0	382.0	-4.1
57	72	Convergent Technologies Inc.	361.7	361.7	163.2	121.6
58	76	Martin Marietta Corp.	3,020.4	361.5	154.0	134.7
59		Thorn EMI PLC	3,761.2	348.7	314.5	10.2
60		Mannesman Kienzle GMBH	428.1	343.0	316.0	8.5
61	61	Compaq Computer Corp.	329.0	329.0	111.2	195.8
62	64	Seagate Technology	304.0	304.0	222.0	36.9
63		BASF	NA	298.2	274.5	8.6
64		Plessey Co. PLC	1,953.1	290.0	287.0	1.0
65		Ricoh Company Ltd.	NA	290.0	223.2	29.9
66	57	Parsdyne Corp.	289.9	289.9	209.0	38.7
67	46	3M	7,705.0	281.4	260.0	8.2
68	49	Mitel Corp.	277.4	277.4	241.0	15.1
69		Ferranti PLC	666.7	266.0	222.0	19.8
70	58	Sanders Associates Inc.	837.7	260.8	209.7	24.3
71	48	Boeing Co.	10,354.0	260.0	250.0	4.0
72	55	Shared Medical Systems Corp.	256.8	256.8	210.8	21.8
73	56	M/A-COM Inc.	797.3	250.0	200.0	25.0
74	51	Perkin-Elmer Corp.	1,255.5	250.0	225.0	11.1
75	101	Zenith Electronics Corp.	1,716.0	249.0	170.0	46.4
76	67	Continental Telecom Inc.	2,300.0	242.4	174.8	38.6
77	68	Cray Research Inc.	228.8	228.8	169.7	34.8
78	66	General Instrument Corp.	1,017.7	225.0	210.0	7.1
79	42	Gould Inc.	1,390.4	224.5	189.0	18.7
80	106	Apollo Computer Inc.	215.9	215.9	80.7	167.5
81	65	Dysan Corp.	214.1	214.1	180.0	18.9
82		Cap Gemini Sogeti	206.0	206.0	183.7	12.1
83	62	Informatics General Corp.	191.2	191.2	152.1	25.7
84	84	NBI Inc.	191.1	191.1	163.8	16.6
85	77	Quotron Systems Inc.	189.8	189.8	153.8	23.4
86	75	Gerber Scientific Inc.	189.7	189.7	137.3	38.1
87		Nokia Electronics	1,566.2	181.0	151.3	19.6
88	66	Intel Corp.	1,629.3	180.0	175.0	2.8
89	78	Ucccl Corp.	173.4	173.4	153.0	13.3
90		Scicon International Ltd.	173.3	173.3	139.4	24.3
91		CISI	171.6	171.6	169.7	1.1
92	71	Centronics Data Computer Corp.	171.5	171.5	164.1	4.5
93	90	Micom Systems Inc.	171.4	171.4	113.7	50.7
94	89	Verbatim Corp.	168.9	168.9	147.4	14.5
95	63	CPT Corp.	168.4	168.4	181.7	-7.3
96		Norsk Data AS	166.7	166.7	121.2	37.5
97	69	Televideo Systems Inc.	163.0	163.0	168.7	-3.3
98	113	General DataComm Industries Inc.	161.2	161.2	96.3	67.3
99	85	Planning Research Corp.	324.3	161.2	135.6	18.8
100		Lotus Development	157.0	157.0	53.0	196.2

Ranking is by dp revenue in millions. NA: Not available.

DP AS % OF TOT	NONDOLLAR ACCTG CURRENCY 1984 DP	% 1983 DP	CHG	1984	EMPL	R&D 1984	R&D % TOT	NET INCOME	FISCAL YEAR END
35.1	£308.0	£347.0	-11.0	U.K.	18,000	NA	NA	$164.0	March
100.0						$37	9.1	62.9	Dec.
100.0					3,500	16	4.0	4.7	Sept.
27.0					20,821	67	4.7	131.5	May
78.9					5,505	12	2.5	66.9	Dec.
95.8					5,100	28	7.3	-120.9	April
100.0					1,700	16	4.4	-13.8	Dec.
9.2					61,000	NA	NA	191.8	Dec.
9.2	£260.0	£207.6	25.2	U.K.	91,544	NA	NA	120.8	March
80.1	DM977.6	DM805.8	21.3	W GER	8,000	NA	NA	NA	Dec.
100.0					1,400	11	3.3	12.9	Dec.
100.0					NA	12	4.1	23.8	June
NA	DM650.0	DM700.0	21.4	W GER	NA	NA	NA	NA	Dec.
14.8	£217.5	£189.4	14.8	U.K.	36,838	NA	NA	127.9	Dec.
NA	Y68,900.0	Y53,000.0	30.0	JAPAN	20,000	NA	NA	67.8	March
100.0					NA	NA	NA	11.0	Dec.
3.8					66,700	443	5.7	733.0	Dec.
100.0					4,900	49	17.6	NA	Feb.
39.9	£199.5	£146.5	36.2	U.K.	11,087	NA	NA	38.4	Dec.
31.1					10,700	33	4.0	39.7	July
2.5					93,000	NA	NA	787.0	Dec.
100.0					2,800	22	8.9	33.8	Dec.
31.3					10,541	25	3.3	39.9	Sept.
19.9					15,480	92	7.3	66.0	July
14.5					29,000	86	5.0	63.6	Dec.
10.5					22,000	NA	NA	196.0	Dec.
100.0					2,203	37	16.3	45.4	Dec.
22.1					NA	48	4.7	32.7	Feb.
16.0					19,603	123	6.8	17.8	Dec.
100.0					3,021	25	11.8	23.9	Dec.
100.0					NA	30	14.3	-49.9	Oct.
100.0	FF1,800.0	FF1,400.0	28.6	FRANCE	4,600	10	5.0	10.9	Dec.
100.0					2,614	4	2.4	4.7	Dec.
100.0					1,997	10	5.2	14.5	Dec.
100.0					1,725	NA	NA	26.8	Dec.
100.0					NA	NA	NA	23.6	Dec.
11.5	M1,056.0	M843.0	25.8	FINLAND	28,000	36	2.3	14.2	Dec.
11.0					25,400	160	11.0	198.2	Dec.
100.0					NA	13	7.4	8.0	Dec.
100.0	£130.0	£92.0	41.3	U.K.	3,000	NA	NA	NA	Dec.
100.0	FF1,500.0	FF1,293.0	16.0	FRANCE	3,030	8	5.0	11.5	Dec.
100.0					NA	13	7.5	0.3	Dec.
100.0					1,908	15	9.1	25.4	March
100.0					2,780	16	9.5	-2.0	June
100.0					1,744	10	5.9	5.4	June
100.0	Kr1,360.0	Kr985.0	53.7	NORWAY	NA	NA	NA	NA	Dec.
100.0					1,233	9	5.5	4.5	Dec.
100.0					2,029	10	6.7	12.6	Sept.
49.7					5,600	NA	NA	7.2	June
100.0					NA	13	8.2	36.0	Dec.

THE DATAMATION 100

THE LEADING U.S. DP COMPANIES

1984 RANK	COMPANY	1984 DP REVENUE
1	International Business Machines	$44,350.0
2	Digital Equipment Corp.	6,230.0
3	Burroughs Corp.	4,500.0
4	Control Data Corp.	3,755.5
5	NCR Corp.	3,670.0
6	Sperry Corp.	3,473.8
7	Hewlett-Packard Co.	3,400.0
8	Wang Laboratories Inc.	2,430.7
9	Apple Computer Corp.	1,897.0
10	Honeywell Inc.	1,825.0
11	Xerox Corp.	1,518.0
12	Data General Corp.	1,229.7
13	Commodore International Ltd.	1,120.5
14	TRW Inc.	1,100.0
15	McDonnell Douglas Corp.	983.0
16	Automatic Data Processing Inc.	958.3
17	General Electric Co.	885.0
18	Texas Instruments Inc.	860.0
19	Storage Technology Corp.	806.6
20	General Motors Corp.	798.1
21	Amdahl Corp.	779.4
22	Harris Corp.	730.0
23	Tandy Corp.	719.1
24	Computer Sciences Corp.	709.8
25	Prime Computer Inc.	643.8
26	ITT Corp.	640.0
27	Motorola Inc.	618.0
28	Datapoint Corp.	599.2
29	Tandem Computers Inc.	595.9
30	Computervision Corp.	594.3
31	National Semiconductor Corp.	550.0
32	Dataproducts Corp.	494.5
33	Telex Corp.	442.7
34	Intergraph Corp.	403.8
35	Tandon Corp.	398.8
36	Tektronix Inc.	394.0
37	Diebold Inc.	374.1
38	Mohawk Data Sciences Corp.	368.0
39	Convergent Technologies Inc.	361.7
40	Martin Marietta Corp.	361.3
41	Compaq Computer Corp.	329.0
42	Seagate Technology	304.0
43	Paradyne Corp.	289.9
44	3M	281.4
45	Sanders Associates	260.8
46	Boeing Co.	260.0
47	Shared Medical Systems Corp.	255.9
48	M/A-Com Inc.	250.0
49	Perkin-Elmer Corp.	250.0
50	Zenith Electronics Corp.	249.0
51	Continental Telecom Inc.	$242.4
52	Cray Research Inc.	228.8
53	General Instrument Corp.	225.0
54	Gould Inc.	224.5
55	Apollo Computer Inc.	215.0
56	Dysan Corp.	214.1
57	Informatics General Corp.	191.3
58	NBI Inc.	181.1
59	Gustron Systems Inc.	179.8
60	Gerber Scientific Inc.	169.7
61	Intel Corp.	160.0
62	Unisys Corp.	173.4
63	Centronics Data Computer Corp.	171.8
64	Micom Systems Inc.	171.4
65	Verbatim Corp.	168.9
66	CPT Corp.	166.4
67	Televideo Systems Inc.	163.0
68	General DataComm Industries	161.3
69	Planning Research Corp.	161.3
70	Lotus Development Corp.	157.0
71	Cipher Data Products Inc.*	153.8
72	Signal Cos.*	150.0**
73	Reynolds & Reynolds Co.*	150.0**
74	Recognition Equipment Inc.*	149.3
75	Decision Data Computer Corp.*	147.0
76	Printronix, Inc.*	146.6
77	Cullinet Software*	143.0
78	Management Sciences America Inc.*	141.8
79	National Data Corp.*	139.9
80	Fidata Corp.*	135.8
81	InterCom Inc.	131.7
82	Lear Siegler Inc.*	130.0**
83	Applied Data Research Inc.	128.2
84	Mead Corp.*	127.8
85	Computer & Communications Tech. Corp.	123.1
86	Intelligent Systems Inc.	121.0**
87	Floating Point Systems, Inc.*	120.4
88	Schlumberger Ltd.*	120.0**
89	Keypro Corp.	119.0
90	Computer Associates International Inc.	118.1
91	Software AG Systems Inc.	115.0
92	Telerate Inc.	114.0
93	Commerce Clearing House Inc.	113.8
94	ISC Systems Corp.	107.0
95	Lee Data Corp.	100.9
96	Dun & Bradstreet*	100.0
97	American Management Systems Inc.	97.0
98	Conrac Corp.	96.0
99	Cincom Systems	95.0
100	HBO & Co.	94.7

Ranking is by dp revenue in millions of dollars.

†Company appeared on 1983 Datamation Top 100 list and does not appear on 1984 list.

**Estimated by Datamation.

1

INTERNATIONAL BUSINESS MACHINES

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Yes, IBM can fail, as it finally proved with its PCjr. Yet that blot hardly obscures the firm's successes throughout last year. Revenues and profits continued their upward spiral, overcoming the drag of currency translations that affected 40% of its business. Total corporate revenues reached $45.94 billion, up 14% over 1983. Earnings did even better, up 20% to $6.58 billion. DATAMATION estimates that dp revenues increased 21% to $44.29 billion. The company completed the largest acquisition in its 70-year history. It introduced key new products in all areas, and paved the way for the early 1985 debut of the Sierra generation of mainframes. It reached a settlement with the European Commission, ending the Common Market's four-year-old antitrust case. It continued to develop new technologies, such as a 1Mb memory chip. And it introduced a raft of micro products that helped increase its domination of the pc industry.

The Rolm merger cost $1.26 billion and required administrative reshuffling to transform the Santa Clara firm into a true-Blue IBM operation, but in return it gave IBM an entrée into the PBX market.

IBM itself trotted out key new products, more sharply defining those it considered strategically important. Mainframe introductions included the XXXX interim series, several 4300 models, the 3480 tape cartridge subsystem, and cache-equipped models of the 3880 disk controllers.

In the middle of its line, IBM positioned the System/36 as its choice for departmental level and small business applications. In data communications, the IBM Cabling System disappointed many who had expected the token passing ring network, now scheduled for 1986. In software, IBM extended PROFS and DISOSS to enable mainframes, System/36s, and PCs to interchange final-form documents.

The feisty Entry Systems Division debuted the PC AT—an 80286-based multi-user pc—but supplies dried up due to disk shortages. ESD also premiered its PC Network, developed in conjunction with Sytek, to connect as many as 72 PCs. IBM also entered the micro software market in a big way, at one point bringing out 31 programs. The company shipped nearly 2 million PCs in 1984.

Outside the U.S., the PC finally achieved domination in worldwide micro sales. The EC settlement enabled the company to sell unhindered; the constraint was that it now has to provide detailed interface specs 120 days after product announcements.

The firm realigned its management structure to give more responsibility to foreign operating units, dividing its European operations into five relatively autonomous groups and its Americas/Far East subsidiary into three groups.

The Asia/Pacific unit remained the only subsidiary unable to dominate its market. Since 1979, the unit has trailed Fujitsu in Japanese sales, despite locally developing and manufacturing most of its products like the 5550 kanji workstation and JX pc.

Revenue figures are in millions of dollars. Each increment represents $100 million.

2

DIGITAL EQUIPMENT CORP.

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DEC's performance in calendar 1984 left little doubt that its earnings slump a year earlier had been a temporary aberration, the by-product of a messy reorganization. Comparisons of '84 with '83 have therefore been distorted by that uncharacteristic poor showing: net income, for example, grew by a whopping 86% during 1984, to $487 million from $262.1 million. And after suffering the humiliation of being one of the 10 worst performing stocks in 1983, DEC proved to be one of the biggest gainers last year by registering a 54% increase in stock value over the period.

The reorganization that affected Digital's U.S. business in the latter half of 1983 had been implemented earlier overseas. As a result, the company's international sales, particularly in Europe, consistently outpaced domestic growth levels and last year accounted for 35% of total revenues, which grew a healthy 29% to $6.23 billion.

The year 1984 was also one in which DEC's fortunes were tied closely to the vagaries of the U.S. economy. For much of the year the company rode the boom, selling a mixed bag of older VAX technology. But when the economy turned bearish during the later stages of the year, new orders slowed to a 17% growth level, and have continued to soften through the first quarter of 1985. Even surging overseas demand began to slow under the weight of the omnipotent dollar.

The year's end brought a spate of new product announcements, including the long-awaited high-end VAX, the 4MIPS 8600, or Venus, and revamped All-in-One office automation featuring new voice technology.

Despite the new announcements much uncertainty remains. DEC has entered a new product transition phase, and so what it can build is not yet in sync with orders. Another problem is DEC's MicroVAX II, which the company effectively preannounced in the fall of 1983, but which it has still not formally unveiled.

Though doubts persist over architectural constraints at the high end of its business, things are now much clearer at the workstation end. The company backed away from an ill-conceived foray into the retail pc business by ceasing manufacture of the Rainbow pc at its Westfield, Mass., plant.

The move is the first phase of a three-year layoff plan. DEC will cut 5,000 workers from its 30,000-strong manufacturing operation to help control costs.

The initiative could also result in improved productivity and return on investment—a case of the company cutting its cloth to fit the user suit. DEC showed last year that it was running a much tighter ship. Its operating margin—sales minus cost of goods, research, selling, and administration—increased to 8.6% from 7.3% over calendar 1984, despite the fact that it was selling older technology and ramping up its new products at the same time.

Revenue figures are in millions of dollars. Each increment represents $100 million.

3

BURROUGHS CORP.

Burroughs Place
Detroit, MI 48232
(313) 972-7000

Business was on the upswing for Burroughs in 1984. The charter member of the mainframers' old-timer club is making headway in its effort to become a service-oriented organization for all its customers' data processing needs—terminals, intelligent workstations, office automation software and nets, and traditional iron.

The firm reported record orders and revenues for the year as well as increased net income. Revenues were up 11% to $4.88 billion from $4.39 billion in 1983. Net income in 1984 was $244.9 million, up 24% compared with $196.9 million in 1983. Fourth quarter orders alone increased by more than 20%.

DATAMATION estimates that Burroughs data processing had 1984 revenues of $4.5 billion, up 12.5% from 1983's $4 billion. Sales of the new small- and medium-sized mainframes, the A3 and A9, indicated strong market acceptance. Demand for office automation products, particularly the new B25 workstation and XE520 and XE550 microprocessor-based multi-user systems, helped push Burroughs' workstation and office automation revenues up 30% last year, to $765 million. Burroughs apparently benefited from delays with the IBM PC AT, and analysts say the B25 competes favorably with the AT on a price/performance basis. Analysts even go so far as to estimate that the popular product will provide up to 7% of Burroughs' revenues in '85.

In an effort to increase its market presence for the B25, Burroughs launched plans to expand its network of independent computer dealers to about 450 from 200. The company now makes both products at its own factories.

The year was not without its disappointments. The company's Memorex unit, which contributed almost $1 billion in sales, had disappointing results, due mainly to snags in the plug-compatible disk drive and oem peripherals businesses. Production problems plagued the top-of-the-line 3680 disk drive. Glitches in thin-film head technology were followed by problems in quality control. Assembly lines halted for a time last September, and 3680 production at year-end was lagging behind surging demand. The company is still playing catch-up. The mishaps at Memorex resulted in management shakeups, with a former Storage Technology production executive taking charge of manufacturing. Like Control Data, Memorex dropped out of the oem disk drive business, concentrating instead on its pcm and Burroughs demands. In another cost-cutting move, the company closed 21 production facilities.

For 1985, Burroughs can expect strong pent-up demand for the high-end A-15 processor, introduced earlier this year. And analysts predict that a void in the IBM-compatible reel-to-reel tape drive market will prove to be a blessing for Memorex, one of the few remaining suppliers of the device. Memorex may also benefit from curtailed production by Control Data and Storage Technology of the 3380-class disk drives.

Revenue figures are in millions of dollars. Each increment represents $100 million.

4

CONTROL DATA CORP.

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A period of growth and vitality at Control Data Corp. appeared to end abruptly in 1984. Plagued by setbacks in its usually strong computer peripherals and computer service businesses, by increased competition in its mainframe business, and by management shake-ups in its peripherals division, CDC had a rough year. The corporation saw earnings dip 80%, to $31.6 million from 1983's $161.7 million. The news isn't all bad, however. Corporate revenues continued to climb, growing 9.6% to $5.03 billion from $4.58 billion. Dp revenues increased 7% to $3.76 billion.

Though CDC continues to be a leader in the disk drive market, with 1984 sales estimated at $600 million, its market share has steadily shrunk, from almost 50% five years ago to 29%. Analysts say the company has been slow to respond to changes in the market. Last year's substantial drop in earnings is a result of a $70.3 million after-tax charge levied because the company dropped its IBM plug-compatible disk drive business.

CDC also discontinued its Cricket line of 3½-inch disk drives for microcomputers. Drastic price cutting and increased competition from IBM have made matters worse. Insiders say Control Data is now stuck with a huge inventory of overpriced 5¼-inch drives that it must sell at a loss.

The company recently overhauled the peripheral unit's management, demoting its chief executive and replacing him with Lawrence Perlman. Perlman is credited with turning around the Commercial Credit subsidiary by slashing expenses and changing its market direction.

CDC has a large services business, but analysts say the company has an image problem in that it is perceived primarily as a mainframe manufacturer (mainframes constitute less than 20% of total business) and not a computer services supplier. And even this segment of the company has not escaped stormy weather. Revenues were down in 1984, and profits from CDC's timesharing business, once a fortune-maker, are said to be dwindling. With the emergence of pcs, timesharing is no longer in demand. The company has closed regional Cybernet timesharing centers in California, Minnesota, and Texas in an effort to restore profitability to the business.

The company intends to sell its Commercial Credit Co. unit. While the service contributed 24% of 1984 total revenues, Commercial Credit's involvement in the recent collapse of Ohio thrift institutions has cost it in excess of $20 million. The sale is said to be an indication that the company intends to concentrate its full attention on the dp business.

Amid the turmoil, there's been talk of a takeover—indeed, some analysts say that CDC's best move would be to become a subsidiary of another company. Chairman William C. Norris, however, adamantly opposes a takeover. But it may take serious reorganization for the company to make a comeback.

Revenue figures are in millions of dollars. Each increment represents $100 million.

5

NCR CORP.

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NCR, 100 years old last year, fell short of its goal of revenue growth equal to that of the industry as a whole, with modest growth in major markets such as retail and financial sectors hurting the hoped-for gains. Nonetheless, the 9% improvement brought total revenues to $4.07 billion from the year earlier's $3.73 billion. The 19% net income climb to $342.6 million was skewed by a $30.6 million gain resulting from the DISC tax law changes.

DATAMATION estimates that dp revenues grew a bit better than total corporate revenues, rising 10% to $3.67 billion. While revenue growth occurred in all product areas, the sales gains varied greatly between product categories. Financial terminals revenue inched up 1% in both '84 and '83, and retail terminals revenue rose 4% last year following a 1% climb in '83. And while general purpose terminals produced a healthier 13% improvement in revenues that fell short of the earlier year's 18% increase.

Revenues from general purpose computers, office systems, personal computers, and data communications systems combined to garner an 18% increase in '84, a big improvement over increases of 6% in '83 and 1% in '82. Adding revenues of the three categories of terminals to the computer and datacom systems totals brings NCR's complete hardware and software revenues to $2.4 billion in 1984. Revenues from services (including customer services, dp services, and telecom services) and maintenance round out the remaining third of NCR's total data processing revenues. Together, services and maintenance revenues increased 8% in both '84 and '83.

Strong order gains were registered in the U.S. as well as overseas for the Tower low-end processors, the NCR 9300 mainframes, and data communications products. Sluggish sales of office systems and personal computers, however, led to losses.

Already brisk sales of the Tower line were further bolstered when NCR rolled out the Tower XP, which runs Unix System V. Some 75 oems quickly signed up for it. Ironically, one of NCR's current oems is its old archrival and fellow BUNCH member Sperry. NCR is selling its Blue Bell, Pa., competitor $40 million worth of Tower XPs to complement Sperry's across-the-board Unix offerings.

That NCR was in the microcomputer business last year seemed to be a well-kept secret in an industry that has few. Sales of the PC 4 and PC 5 micros, aimed at the oem market, were so slow that the PC 4 was taken out of domestic production in the fall. The fate of Decisionmate V, NCR's IBM-compatible pc, doesn't look especially promising either. Even with a $20 million ad campaign and the creation of its personal computer division, NCR is having trouble establishing itself as a pc vendor.

With old markets waiting for new products (incorporating the 32-bit chip set) and new markets ramping up to profitability, it's doubtful that NCR will reach greater revenue growth in '85. Maybe, like a good wine, NCR just needs a bit more time to age.

Revenue figures are in millions of dollars. Each increment represents $100 million.

6

FUJITSU LTD.

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The flagship of the Japanese computer industry profitably sailed through the turbulent IBM waters that overwhelmed other pcmers in 1984. Corporate revenues soared 26.4% to a healthy $6.44 billion (Y1.53 trillion). DATAMATION estimates that Fujitsu posted 1984 worldwide dp sales of $3.50 billion for an annual upturn of 25%.

The Japanese market accounted for about three quarters of Fujitsu's revenues. Worldwide pcm sales also helped pump up profits. A weak yen certainly contributed to exports, but so did the popularity of Fujitsu's peripherals. Analysts estimate Fujitsu's shipments of 3380-compatible hard disk drives jumped 50% during 1984.

On the home front, Fujitsu focused on consolidating its market dominance by keeping Big Blue at bay. The pressures of Fujitsu's software squeeze eased in 1984 with the introduction of a new operating system for its M-series mainframes and the rewriting of substantial portions of code to escape patent-infringement charges and costly cross-licensing from IBM. In the domestic mainframe systems replacement market, Fujitsu took away almost 40 installations from IBM, while IBM took only 10 of Fujitsu's replacements. Fujitsu continues to meet the needs of the world's second largest computer market with applications software, a Japanese language processing capability users prefer over IBM's approach, and user training and support.

Nevertheless, except for Asia, Fujitsu continues on a path of oeming to partners with stronger sales and services networks. Despite its position as the leading IBM alternative in 1984, Fujitsu gave no indication that it would soon sell mainframes under its own name in either America or Europe.

Recognizing a major weakness, Fujitsu continues to make all-out efforts to create a clan of external allies to bolster software support. Heavy investment in partially and wholly owned software subsidiaries and successful efforts to bring independent software houses into the Fujitsu fold has paid off. With software subsidiaries planted and nurtured in 1984, Fujitsu is ready to target niche applications markets in communications, office and factory automation, and finance that have long eluded its grasp.

An internal data communications network placed all subsidiaries and affiliated companies on line with each other when Fujitsu moved into its new coporate headquarters in December 1984. A Fujitsu network engineering subsidiary was created to develop and market similar VANs to large corporations. Fujitsu's technological prowess in fiber moved into the commercial arena as its communications customer base blossomed with the opening of the Nippon Telegraph & Telephone optical fiber trunk line in October 1984. Although the communications division hauled in an estimated 16% of 1984 sales, it was the sole drag upon earnings because of the continuing burden of development costs.

Revenue figures are in millions of dollars. Each increment represents $100 million.

7

SPERRY CORP.

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Univac to Unix was more than dropping a name and picking up a technology at Sperry. The year 1984 was a time of transformation that resulted in a revamped product line (Unixvac?) and new management style.

In an effort to build the company at a faster rate, Sperry is offering a complete line of Unix computers, including micros, minis, and mainframes as well as related products. All of them run under the AT&T-supported Unix System V. Sperry also continues to support its proprietary operating system.

Sperry's 1984 dp revenues were up 13% over 1983, rising to $3.47 billion. Mainframe sales accounted for $1.45 billion, minis $57.8 million, microcomputers $503.4 million, data communications $177.6 million, software $208.1 million, computer services $180.6 million, and maintenance and repair $665.4 million.

All market segments showed increases except minicomputers, which were down 17% from $69 million in 1983. Total corporate revenues were $5.37 billion, compared to $4.75 billion in 1983. Corporate income for the year was up 46.7% over 1983 to $267.6 million.

Sperry does 30% of its dp business overseas—23% comes from Europe, 6% from the Far East, and 1% from other regions. Despite the fact that Europe is Sperry's second largest international sales region, Japan is among the top three national sales areas, tying with Germany and Canada. In fifth place is the United Kingdom at 3%. The United States is still the company's largest market at 67%.

Building on sales spurred by the economic recovery that started more than a year ago, the Information Systems Group reorganized its structure, hoping for more decentralization of responsibility and for an enlarged spirit of entrepreneurship. As a result, the company is owning all of its micro and mini product offerings.

The company has abandoned the "not invented here" attitude in an attempt to bring products to market faster. Various divisions within the ISG were also restructured.

New product offerings included Mapper 5, a fourth generation language microcomputer capable of either standing alone or serving as a mainframe connection. Other products launched in 1984 included a portable micro, the Sperry Computer Integrated Manufacturing/Mechanical workstation (Sperry's entry into CAD/CAM), and the Usernet local area network. These products too were owned.

The 1100 series has the distinction of being one of the only new products developed in-house. Sales were healthy and by November, 47 of the 1100/90s, valued at $74 million, had been shipped. Bookings as of Nov. 30 totaled 143 systems with a total value of $753 million.

The company also reports there is life in the 1100/60 and 1100/70 systems. Orders for these two products exceeded $1 billion as of Nov. 30.

Revenue figures are in millions of dollars. Each increment represents $100 million.

8

HEWLETT-PACKARD CO.

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From atop a great pile of money, Hewlett-Packard looked down upon 1984 and liked what it saw. Corporate revenues were up 27.6% to $6.29 billion, from $4.93 billion a year earlier. Net income for 1984 was up 52% at $665 million, which includes a $118 million windfall from DESC. In a year when a strong dollar crimped the international sales of many, HP's overseas orders still totaled 43% of corporate revenues, up from 40% the year before.

Other corporate numbers also showed gains. Backlog orders for 1984 amounted to $1.3 billion, compared with $1 billion in 1983. HP's net cash balance remained virtually unchanged at $720 million. Total employment stood at some 80,000 in 80 countries where some 9,700 computer-related products were being sold. About half of HP's revenues, and slightly less than half of the company's profits, were derived from cpus and peripherals.

What seemed new was HP's militant entry into the office automation field, which it based upon its installed base of almost 17,000 Series 3000 minicomputers. Within the portmanteau of Project Spectrum, HP planned to introduce RISC technology into all of its microcomputers and minicomputers, which could make it one of the fastest MIPS movers in town. HP's $592 million investment in assorted R&D projects, which included RISC, represented 9.8% of sales revenues.

HP looked towards the East while others were mining more traditional lodes, and formed a joint venture with the China Electronics Import and Export Corp. and the Beijing Computer Corp. to sell and support gear that has yet to be disclosed. HP also did a deal with Mexico's DESC Sociedad de Fometo Industrial, S.A. de C.V., wherein the latter will build and distribute HP 150 touch-screen personal computers and future related products. HP owns 49% of the Mexican venture.

At the same time it was cutting costs, Hewlett-Packard released a variety of new products designed for business and scientific applications. Among them were the HP 3000 Series 37 business computer, based on CMOS technology and which the firm claims offers all the performance of a three-full-bay HP 3000 Series III of only three years ago. More an option than a standalone product was the Personal Productivity Center, which runs off any 3000 and supports up to 80 electronic mail sessions. Additional office equipment included the portable micro, the ThinkJet personal micro printer, and the LaserJet desktop printer.

Still, HP has a way to go to establish a heavy office presence in distibuted data processing. While the firm remains number one in test and analytical instruments and number two in minicomputers, it holds a lesser place among leaders in the market for $1,000 to $5,000 micros. DATAMATION also estimates that micro sales account for less than 5% of HP's revenues, but 5% of more than $6 billion is hardly small beer.

Revenue figures are in millions of dollars. Each increment represents $100 million.

9

NEC CORP.

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NEC has been nuturing its dp sector with a passion, and more than one third of its $7.59 billion corporate revenues now comes from dp. Anxious to promote itself as a high-tech superpower, NEC has followed the familiar formula of touting its computer and communications capabilities. These capabilities are indeed formidable, particularly on NEC's home turf, where it derives 80% of its dp and datacom sales, which DATAMATION estimates totaled $2.79 billion in calendar 1984. NEC, which ranks as Japan's third largest dp supplier, has the most muscle domestically in the mainframe and micro fields. It has captured close to 70% of the Japanese micro market, an achievement even IBM would envy. The company has also shown significant strength on the telecom side, with its big push in PBXs. The Japanese company currently owns about 8% of the world PBX market.

NEC's largest foreign market is North America, where it pulls in 7% of its dp and datacom revenue. So far, NEC has had mixed results in the U. S., where sales of its micros and small business systems have been decidedly sluggish. The outlook for NEC PBXs in the U.S., however, is much brighter. The company currently has roughly 10% of the U.S. switching market. The product to watch in that market is the NEAX-2400 digital PBX, which has won juicy contracts from the divested Bell operating companies.

Last year NEC was very active in the American arena. In March it signed up Honeywell to distribute its large System 1000 mainframe (called the Acos 1000 in Japan). Earlier this year NEC returned the favor to its partner and agreed to buy Honeywell's slumping Japanese operation.

On the communications front, NEC combined forces with GE in the United States. The two companies are collaborating on an international network service that will connect NEC's value-added network in Japan with GE's 600-city network in the U.S. NEC also got together with Hewlett-Packard Ltd. in Japan to produce a micro development support system. The Japanese company was busy in Europe as well last year. Broadening its Continental business base, it opened up NEC Business Systems (Deutschland), which will handle peripherals, business computers, and fax machines. In France, NEC teamed up with Bull in a distribution agreement for the Acos 1000.

The Acos mainframe got a new operating system in 1984. Called the MS-UX, the Unix lookalike was available only in Japan. The company also came up with new 16-bit and 32-bit models for its 150 minis. The most unusual development, however, was the OBC-I, the world's smallest computer to be mounted on a satellite.

This year NEC became the first Japanese mainframer to challenge IBM's Sierra. NEC, which announced the air-cooled Acos 1500 series in March, claims a performance of 37MIPS for the system's uniprocessor. Indeed, it's at the high end of the market where the determined NEC could nick IBM and climb even higher in the dp domain.

Revenue figures are in millions of dollars. Each increment represents $100 million.

10

SIEMENS AG

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It was a watershed year for West Germany's national mainframe maker in 1984. Siemens is one of those large European electronics firms that seems to have more in common with a bureaucracy than a fast-track, high-tech company. The German giant pulled in total revenues of $16.08 billion (DM45.82 billion) last year. Siemens' dp operation accounted for roughly 17% of that take, with sales of $2.79 billion (DM7.9 billion).

DATAMATION estimates that this sum breaks down with mainframe revenues reaching $807 million, minis at $175.4 million, and micros at $17.5 million. Siemens' largest revenue producer is the data communications sector, where revenues were an estimated $982.5 million. The peripherals and terminals area is also large, with revenues hitting about $491.2 million. The rest of Siemens' dp revenues come from other areas of the company with smaller dp interests, such as the Power Engineering and Automation Group and the Components Group.

Siemens' management realized back in '83 that it had a structural problem and immediately initiated an overhaul. Last year it completely reorganized its dp and telecom operations to better integrate computer and communications technologies. Starting in April of '84, the old Data Systems Group and parts of the Communications Group were merged into a new Communication and Information Systems Group (CISG), which the company says has responsibility for "everything concerning the office." That includes dp systems, terminals, and PBXs.

In the office automation arena, the company is putting its money on the EMS 5000 range of office computers and the new Hicom digital PBX. Siemens has always had a strong presence in the office market through its telephone, telex, and typewriter sales, but it has recently lost ground in the transition from these to newer dp-based office tools.

Stateside, Siemens inked an agreement with Valid Logic Systems to tie its CAD systems to Valid's CAE workstations. Back in Europe, the company joined 12 other local vendors lending support for Open Systems Interconnection standards. Later last year, Siemens teamed up with ICL, Bull, Philips, Nixdorf, and Olivetti to form a European Unix group.

Although represented in 120 countries, Siemens does around 50% of its dp business in West Germany. Another 22% comes from the rest of Europe, while the U.S. accounts for 10%. Even in its home market, Siemens dominates only around 20% of the computer business, and its long-awaited pc had little success last year. Nevertheless, mainframe sales remain strong, thanks to the company's long-standing links with many of Germany's engineering, industrial, and commercial companies. Most of these mainframe sales (over 80%) were for its 7.500 range. As part of its support plan for mainframe users, Siemens also took a major step foward on the peripherals front last year when it signed up to oem 3380 disk drives from IBM.

Revenue figures are in millions of dollars. Each increment represents $100 million.

11

WANG LABORATORIES INC.

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One story in 1984 was of Wang's familiar success: the company milked its fat word processing cow for the ninth straight year, aided by a lively economy and strong overseas business. Total revenues climbed 35% to $2.42 billion, and net income grew a healthy 29% to $230.7 million. Gains in the Far East inched the company's international business up to 29% of the total.

That was one story—the old story. By the time the first leaves fell to the ground to herald the year's final quarter, a new story was emerging, and storm clouds were gathering over Wang's future as a dp and integrated office systems company. Corporate revenues, which in the first three quarters had grown at 36%, 51%, and 34% over year-earlier periods, slumped dramatically to 18%; equipment sales also slowed to 18%, and orders fell to half their summer level. Suddenly the company was being hit by canceled and deferred orders—a pattern that has continued through 1985.

Now, increasingly skeptical customers doubt whether the firm can convert its word processing preeminence into leadership in the more sophisticated office automation sector. Many now feel that Wang, for years the heir apparent to the OA crown, will have to settle for a niche postion and half its former growth levels of 30% plus.

Wang's problems are not new, but until recently they had been cloaked by its spectacular growth. In 1984, however, Wang's image as a technological leader was significantly tarnished by delays in shipping key products, such as its Wang Office software and its VS 300 supermini.

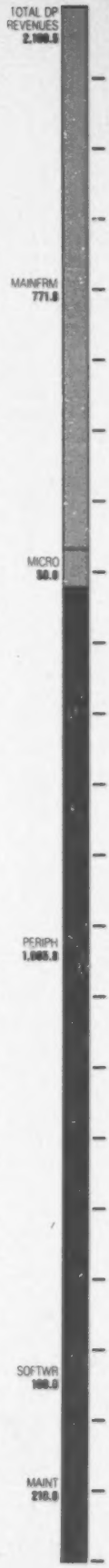
Other products either failed to live up to expectations, didn't work as specified, or were considered irrelevant by customers (WangNet, PIC, and the Digital Voice Exchange).

The net result is that Wang's ability to supply a total and broad solution (including handholding) has been brought into question. To succeed in transforming its word processing leadership into dp strength, Wang can't just be a little better or a little cheaper than IBM and the others; it has to stand head and shoulders above them.

These doubts couldn't come at a worse time for the company. Its word processing business (OIS) is decelerating faster and from a higher base of orders than its dp business (VS) is accelerating. OIS orders totaled $900 million in fiscal 1984 (ended June 30), growing less than 15%. Since then, OIS growth has been put by analysts at closer to 5%.

Wang is countering these problems by aggressively marketing its VS systems and by breaking out of its former proud isolation to form a number of partnerships and joint ventures. There are also signs that management is running a tighter ship. A tight rein on expenses put in place last year has begun to take effect, and head count is growing at only a modest rate. Still, Wang appears to be in for a bumpy ride in the years ahead.

Revenue figures are in millions of dollars. Each increment represents $100 million.



12

HITACHI LTD.

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Hitachi had cause for celebration in 1984. During its 75th anniversary, Hitachi's revenues rose by an estimated 15% to $21.05 billion (Y5 trillion), while profits advanced more than 17% to $824.8 million. Not bad, considering that the previous year Japan's number four computer maker was eating humble pie after getting fingered by IBM for stealing software. The resulting settlement with IBM barely caused a ripple in the 1984 cash flow. Rewriting software took time, but absorbing a lesson in humility made Japan's giant energy and electronics conglomerate reconsider the rough and tumble nature of the pcm business.

The electronics division that includes Hitachi's computer business accounts for about 60% of total profits but only 31% of total sales. Semiconductors have been the real cash cow. Lavish R&D expenses, growing about 12% annually, help Hitachi keep up with and occasionally set the pace for competitors. This R&D spending has helped the company develop a technological autonomy unusual for a Japanese corporation. Hitachi poured mega-yen into developing gallium arsenide LSI and Josephson junction gate arrays. Profit margins improved with a shift from 64K to 256K DRAM production in 1984. This didn't hurt Hitachi's computer business a bit, since nearly 75% of Hitachi's semiconductors find their way into the company's computer wares.

Hitachi played on price/performance to eat into IBM's mainframe market share both at home and abroad. Computer exports jumped 16%, with North American partner National Advanced Systems taking about half of those shipments. BASF and Olivetti in Europe took most of the other half. China and other Southeast Asian nations purchased some small systems directly from Hitachi.

Advanced thin-film magnetic head technology allowed Hitachi to increase sales of IBM 3380-compatible storage devices by more than 30% in 1984. The unveiling of erasable optical disk prototypes showed Hitachi's potential in peripherals. Toward the end of the year Hitachi hinted that shipments would begin by the end of 1985.

Under the terms of the IBM settlement, the company must allow Big Blue to scrutinize any of its new products. That doesn't seem to frighten Hitachi, which is gaining confidence in its software capability. Indeed, last year Hitachi software engineers matched IBM's extended channel architecture and helped prepare a response to Big Blue's Sierra. The much touted Hitac S-810/20 supercomputers found homes at Japanese universities and at Hitachi research labs. Software development at Hitachi focused on developing in-house programming productivity tools and expert systems applications in the sluggish nuclear power industry.

Hitachi, which derived less than 10% of its '84 revenues from telecom sales, is notoriously weak on the communications side. This weakness promises to slow Hitachi's efforts to sell integrated data processsing systems.

Revenue figures are in millions of dollars. Each increment represents $100 million.

13

ING. C. OLIVETTI & CO. S.P.A.

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Last year was probably the most crucial for Olivetti in its 77-year history. Back in 1978, when chief executive Carlo De Benedetti took the helm, the company was a financial wreck. By 1984 he'd made the Italian office equipment supplier seaworthy enough for AT&T to jump on board feet first.

Group revenues last year totaled $2.89 billion, a 36% increase measured in local currency. Dp sales of about $2.01 billion (L3.5 trillion) were also up. AT&T last March bought 25% of the Italian company for $250 million, and signed a series of agreements making Olivetti its European partner for office automation products. Through this accord, the American giant also got its hands on some of Europe's best-designed terminals and pc products. It also got the chance to up its stake to 40% in 1988. And last but not least, AT&T got a nine-year commitment from Olivetti boss De Benedetti.

Olivetti, of course, got what it wanted too. In addition to the massive cash injection, it gained European distribution rights to AT&T's PBX line, to its 3B minicomputer series, and to its Unix operating system. Less tangible but no less valuable, the Italian company dramatically enhanced its credibility as a truly international office systems supplier.

The Italian firm has forged marketing and technological links with companies around the world and now has interest in some 30 concerns in the U.S., Japan, and Europe. Included on the American investment list is Stratus, which recently inked a deal to supply IBM with fault tolerant machines; pcmer IPL Systems; and VLSI Technology Inc. Perhaps the firm's biggest U.S. mistake was automatic teller machine vendor Docutel. This venture went sour, resulting in losses and litigation. Olivetti is now bidding to take control of the company.

Olivetti's two main European subsidiaries, Swiss office products company Hermes Precisa International and French dp systems vendor Nouvelle Logabax, both performed well in 1984. Earlier this year it bought a 49% stake in U.K. micro maker Acorn. To expand its marketing base in Europe, Olivetti bought Exxon's European sales network.

Olivetti is hoping that all of these acquisitions will give it a much-needed technological base and boost its sales, particularly in the U.S. Stateside sales account for only 11% of the company's take. Most of its overall sales still come from its Linea Uno mini range and office terminals. It also distributes Hitachi mainframes in Italy. Last year the company's M24 pc, one of the most successful European micros, was taken across the Atlantic, where it was sold by AT&T as the PC6300. Olivetti also took orders for 1,000 AT&T Unix-based machines, which were oemed.

Despite all the progress made last year, the company still has a few problems. The Unix Europe joint venture is moving slowly, and AT&T is not the marketing arm De Benedetti had hoped. But Olivetti is at last financially sound and has a more watertight future than at any time in the last 30 years.

Revenue figures are in millions of dollars. Each increment represents $100 million.

14

APPLE COMPUTER CORP.

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Apple Computer Corp. plays perennial second fiddle to IBM in the personal computer orchestra, but as a soloist Apple sounded a loud and clear cadenza in calendar 1984. With Macintosh, its new 32-bit micro, and an expanded Apple II line, Apple played on key once again, recovering from the disappointing performances of Apple III and Lisa.

Both revenues and earnings skyrocketed about 75% over 1983's figures. Revenues for calendar 1984 jumped to $1.89 billion, and net income rose to $104.3 million. Despite all the attention paid to the Macintosh line, the new box contributed only 34% of Apple's total revenues. The grizzled old veteran Apple II family contributed a strong 58% of the total revenue, down from the nearly 70% it accounted for in 1983, but still registering a strong gain. Apple's remaining revenues came from maintenance.

Apple leaped into 1984, introducing Macintosh with its now-famous Super Bowl commercial telling us why 1984 wasn't going to be like *1984*. Following on Mac's heels came the release of the Apple IIc, a "semiportable" upgrade of the Apple II. The IIc's flat panel display failed to materialize, however, requiring users to hook it up to a full-size monitor. Later in the year, Apple expanded Macintosh to 512K from 128K. Macintosh's predecessor—Apple's 1983 icon-based pc offering, Lisa—died an unmourned death, although the 2/10 version was reborn as the Macintosh XL.

Apple has proved it can learn from its mistakes. One of them was trying to sell Lisa through a national sales force. The Lisas didn't sell, and what's more, Apple's dealers were alienated. Apple took those dealers back into the fold in 1984, dumped its independent manufacturers' representatives, and hired 350 new dealer sales and support people.

Although Apple sold about 250,000 to 300,000 Macs—more than any other micro has sold in its first year—the firm failed again to penetrate the corporate market. That task was put on the agenda in 1985, when Apple introduced "The Macintosh Office," a group of products based around Macintosh that includes a laser printer and a local area network.

Despite a strong year, sales of both Apple IIs and Macs were slower than expected in the fourth quarter. Inventories piled up throughout the retail channel, prompting Apple to close its four manufacturing plants for a week in early 1985.

Another surprise in early 1985 was the departure of Apple cofounder Steve Wozniak, who said he was resigning because he felt the Apple II, which he designed, was being slighted by Apple management. Wozniak's *sayonara* was only the tip of an iceberg of employee discontent at Apple. A number of other senior and middle managers and top engineers quit or announced retirement as well, including Joseph Graziano, chief financial officer; Kenneth R. Zerbe, vp of operations in Latin America, the Far East, Africa, and Canada; and Delbert Yocam, executive vp and general manager of the Apple II division.

Revenue figures are in millions of dollars. Each increment represents $100 million.

15

HONEYWELL INC.

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Honeywell recorded modest gains through the year, with revenues rising 7% to $6.07 billion. Net income inched up 3.3% to $239 million, but much of the increase was due to a change in the tax law. The earnings decline was caused by its Synertek operation, which was written off at year-end at a cost of $70.6 million. The Information Systems division, however, notched its second consecutive healthy year. The only one of Honeywell's five divisions in the dp industry, HIS saw revenues gain almost 10%, to $1.83 billion, while operating profits jumped 37% to $180 million and operating margins expanded from 7.9% to 9.9%.

Most of the credit for the rebound goes to "Neutron Jim" Renier, the division's president until he was promoted into Honeywell's newly created executive office early in 1985. Since 1982, Renier has slashed expenses, notably on the payroll, earning him his nickname. As one survivor said, "All the buildings are still there. It's just the people who are gone."

HIS also cut costs by signing a 10-year pact with NEC, the Japanese mainframer. NEC will provide Honeywell with high-end mainframes to remarket to its 500-site U.S. installed base and to Italian and British customers through its two European subsidiaries. Honeywell's French business partner, Bull, will sell the same systems elsewhere in Europe, and NEC will market them to the rest of the world. Honeywell will continue making its own DPS family of smaller models in its Phoenix facility. In 1984, HIS introduced the DPS 88/40 series of midrange mainframes from Phoenix and early in 1985 it debuted its line-topping DPS 90 mainframes from NEC.

Despite the new products, however, HIS's mainframe business remains in crisis. The user base is too small, many observers feel, to generate the revenues needed to develop and upgrade systems. Also, for years customers have complained of a lack of third-party software for the GCOS operating system. (While Bull endorsed Unix for its version of the NEC mainframes, HIS has declined to do the same.) Orders slackened toward the end of the year, and HIS is now predicting slower revenue growth in 1985.

Following the mainframer's lead, other HIS products are increasingly being built by other companies to HIS designs. Among the new products offered in 1984 was the NX, a single-user, Unix-based engineering workstation built by Corvus Systems, and the OMS 40 and OMS 90 office automation systems, built in-house. Honeywell also signed with NCR to use NCR's 32-bit chips in its next generation of DPS 4 minis.

HIS jumped with both feet into the factory automation marketplace, a niche that analysts say could be lucrative because the popularity of Honeywell's control products has paved a path to acceptance. HIS premiered the series 4000 to simplify the collection and validation of data entered from the factory floor. It also introduced U.S. users to its Distributed Manufacturing System, developed in the U.K.

Revenue figures are in millions of dollars. Each increment represents $100 million.

16

GROUPE BULL

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Traditional French tenacity seems to be paying off for the country's national dp hero. In 1984 Bull continued its determined march to get back on a more solid financial footing. Revenues climbed to $1.56 billion (FF13.6 billion), an increase of 16.8% in French francs.

Bull still lost money, but not as much as it did in 1983, when the net loss hit $82 million. While last year's net loss was a hefty $56 million, it still represented a 22% improvement over the prior year. The revenue growth was also significantly below the 21% gain achieved in 1983, and the proportion of revenues generated outside France fell from 38% in 1983 to 36.6% last year. That trend should worry Bull, since it is trying to strengthen its international business.

Bull hopes to be back in the black in 1985, a year earlier than the 1986 target set by the French government, which took control of the company three years ago. The French government, which is still injecting capital into the company, pumped $110 million into Bull last year.

Following the merger of four French data processing companies—CII-Honeywell Bull, Transac, Sems, and R2E—to form Groupe Bull in 1983, the management worked hard last year to revamp the product line and forge links with European and U.S. suppliers.

Bull's primary agreement is with Honeywell and NEC, covering the exchange of patents, copyrights, and manufacturing licenses. It also gives Bull the right to market NEC's 1000 processor and Honeywell's GCOS 8 operating system in most of Europe. Four models of the mainframe line will hit the market in 1986. Complementing its investment in GCOS, Bull spearheaded a drive to unite Europe's dp industry behind Unix. Six major vendors agreed to support common Unix programs. Philips in Holland also became a Bull partner last year. The two European heavyweights are jointly developing smart cards, a credit card with embedded microprocessor and memory. Soon after this, Bull announced an agreement with California's Ridge Computers and came out with the Ridge 32-bit Mega-mini scientific minicomputer.

On the product front, the greatest splash was created by the IBM PC-compatible Micral 30 micro. This machine was only one of a host of products that debuted last year; others included micros, workstations, and a new range of large minicomputers called the DPS 6. Bull also enhanced its DPS 7 mainframe line with a new operating system, GCOS 7, to replace the GCOS 64-E.

Looking to the future, Bull joined Germany's Siemens and the U.K.'s ICL in a joint research venture to develop AI software. The French firm hopes for commercial spin-offs from a development project with the French military to design Europe's first indigenous supercomputer.

Revenue figures are in millions of dollars. Each increment represents $100 million.

17

XEROX CORP.

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The computer industry wouldn't be where it is today without Xerox. This, let us not forget, is the company that was here first with the personal computer and the office network. Then again, Xerox wouldn't be in the trouble it's in without the computer industry. It seems as though every time Xerox ventures outside the copier area, it hits a dead end.

So why should 1984 have been different? Well, it wasn't. Xerox began the year by introducing two new products in its 8010 Star workstation line, where it hoped (and needed) to "dramatically improve sales." Xerox finished 1984 by pulling the plug on its Shugart Corp. disk drive operation.

It was the third strike for Shugart, formerly one of the "Big Three" small disk drive makers. Xerox had bought Shugart for $41 million—that's 1977 dollars—to try to establish a broad manufacturing base in the computer business. Seven years later it decided "the Shugart businesses aren't important to the company's long-range plans." And rather than "invest in a long and costly recovery program," it would make "an orderly exit from the business."

Corporate revenues managed to surmount this chaos, rising 6.3% to $8.79 billion from $8.27 billion. They had been flat the year before. The copiers, duplicators, and information systems pieces more than pulled their own weight. They were up 14%, finishing at $2.51 billion compared to $2.2 billion in '83. Dp revenues did even better, jumping $1.16 billion to $1.52 billion, a 31% increase.

So why did president David Kearns admit it was a "difficult" year? Because after a 27% rise in 1983, net income did a quick about-face. It dropped 34% to $290 million from $466.4 million in 1983. That took some doing, since profits in the copier and information segments leaped 8% for the year. Xerox even made company history, although not the kind of which it wants to be reminded. For the first time since copiers were introduced in 1959, Xerox had a quarter in which it lost money—$12 million in the final period.

The insurance business didn't pay much of a premium in 1984. Crum and Foster, the casualty and property group that Xerox bought for $1.6 billion in 1983, lost $10 million for the year, compared with earnings of $145 million in 1983.

It wasn't all downers. Xerox Computer Systems saw revenues soar 38% to $180 million from $130 million. Early this year, XCS scored some much-needed points when it beat out several rivals for a contract to provide factory automation for a General Motors' Delco-Remy plant. That triumph should open the way for more business from GM.

The company also began this year the same way it started 1984—with a new product. The 1090 Marathon copier can make 92 copies a minute, compared with 70 for the previous high-end 1075 machine. But for an additional $37,725, a buyer ought to get more bang for his copier buck.

Then again, that's Xerox's business.

Revenue figures are in millions of dollars. Each increment represents $100 million.

18

AT&T CO.

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Divestiture is a thing of the past, AT&T isn't Ma Bell anymore, and the question persists: what is going on there? Consultants in marketing, corporate culture, and organizational structure stack up in AT&T lobbies like planes at O'Hare; it's rumored that chairman and ceo Charles Brown can quote from memory whole passages of *In Search of Excellence*; Bell Labs and the new R&D centers in the Midwest are hip-deep in genius; and still AT&T can't manage to convince people it's going to sell what it says it wants to sell.

But 1984, AT&T's first full year without the telephone exchanges as the heart of its business, did produce some encouraging numbers for the corporation. DATAMATION estimates that total dp revenues were up 24%, to $1.4 billion from $1.08 billion. Data communications revenues hit $650 million, up a bit from $625 million; software sales rose to $100 million from $75 million; and peripherals stayed flat at $380 million. Most of the increase in dp income came from products that AT&T hadn't before been able to sell outside its captive market of telephone operating companies: computers.

DATAMATION estimates that in 1984 AT&T sold about $120 million worth of microcomputers and about $90 million worth of its Unix-based minicomputer line. But there's no real occasion for joy in these numbers and, apparently, not a lot of profit: estimates of what AT&T spent to promote its well-reviewed IBM PC clone, the 6300, are so high as to be almost unbelievable.

Why weren't sales bigger? Reports of bickering between marketing and manufacturing, between manufacturing and development, and between development and research are nothing new at AT&T, but in 1984, with all eyes on the fledgling monster, they seemed more noticeable. Also, the almost uniformly strong performances posted by the freed operating companies made AT&T's unthrilling 1984 performance all the more embarrassing.

A bright spot in AT&T's computer story was the continued interest in its Unix operating system. The announcement in 1985 of AT&T's Unix-based 7300 pc has heightened activity. With companies throughout the industry looking for a non-IBM operating system that might make an acceptable standard, Unix systems were announced almost weekly. But while the tide seems to be turning toward AT&T's proprietary Unix System V, several non-AT&T Unix systems are grabbing a lot of this market.

AT&T has been signing up partners everywhere, but rumors persist that its deal with Olivetti hasn't given AT&T what it wanted, and that its venture with Philips hasn't yet broken through.

But the welcome mat is still out for would-be joint venturers. Inmos in the U.K., United Technologies and Convergent in the U.S., and the mighty Japanese MITI are all working on specific projects with AT&T, and reports this spring of an attempted deal with DEC also showed AT&T's eagerness to find ready-made paths into the heart of the dp business.

Revenue figures are in millions of dollars. Each increment represents $100 million.

19

DATA GENERAL CORP.

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Like some faded Hollywood star suddenly handed the script of a lifetime, Data General has staged the comeback of all times. Four years ago this 1970s hotshot was being measured for a casket, but there was a spark inside that wouldn't be dimmed. Three years ago we detected signs of life and animation and in 1983 a gathering momentum.

In 1984 would we see the company surge through the $1 billion barrier or fall back in disarray? As it turned out, this Orwellian year was a banner year for Data General.

DG has repositioned itself from a gun-toting 16-bit oem box seller to a full-service commercial operation with major thrusts into the office, personal, and factory automation sectors. By year-end better than half its hardware business was 32 bit, and commercial sales had risen from less than 10% of total revenues three years ago to parity with its technical and scientific business.

Net sales soared 41% to $1.23 billion and net income leaped 150% to $75 million—not counting an extra $3.4 million from an extraordinary gain. The company's net operating margin climbed to 8.8%, higher than its archrival DEC.

Like DEC, DG's numbers were boosted by a very strong overseas performance—particularly in Europe. Late in 1983, Data General's overseas business was growing at only 4%. By the end of the company's fiscal year (September 1984), international sales were growing at 46.2%, compared to the U.S. mark of 42.9%, and this pattern continued through year-end. Early in 1984, Data General named Hisashi Tomino, president of its Japanese subsidiary, to the post of corporate vp. Apparently, he was the first Japan-based Japanese national to be an officer of a U.S. dp company.

DG's market-leading office automation suite, CEO, is now available in all major foreign lanaguages, and there are signs that Germany, France, the U.K., and Japan may be beginning to move forward with major office automation contracts, offering a possible bounty this year.

Product announcements weren't heavy in 1984, and mostly focused on the low end, LANs, and communications. A notable first was the Data General/One, the world's first 25-line LCD portable pc, which began shipping late in the year.

Also announced was a modified MV 4000 (the 400/SC and DC), an entry-level departmental processor; a slew of networking products with an IBM-compatible bias; new engineering workstations; and a new native mode Unix slanted toward workstations.

DG notched up its first microcomputer revenues, some $100 million in all, from its new Desktop Generation models, and its field service revenues grew a blistering 75% to $289.7 million. Founder and ceo Edson de Castro intimated last year that in 15 years only 25% of the company's revenues would come from hardware; the rest would come from software and services.

Revenue figures are in millions of dollars. Each increment represents $100 million.

20

ICL

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Once again it's been all change at ICL, the U.K. mainframer. In has come Sir Kenneth Corfield, whose telecom company Standard Telephones & Cables (STC) snapped up ICL for a cool $540 million in August last year. Out has gone Sir Michael Edwardes, after only a few months with the company as chairman.

There's been some change in ICL's financial fortunes too, with revenues up 8% in local currency to £917 million, or $1.22 billion. The STC takeover of ICL has created a $2.6 billion company. STC is strong in telephone transmission, undersea cable laying, and electronic components, with around half its sales coming from British Telecom, the local PTT. ICL, meanwhile, is one of Europe's oldest indigenous mainframe manufacturers. Together, the two firms hope to take advantage of the computer/communications convergence.

So far, the companies have kept their separate identities. The only concession to the new union has been the transfer to ICL of STC's Business Systems Group, which sells PBXs. But the two sides have begun thrashing out plans for a single intergrated product line, with two of the likely areas being flat screen liquid crystal displays and private networks.

In the meantime, STC is feeling the strain of a two-year acquisition and product development program. (Nearly three quarters of its products have been introduced within the last three years.)

One piece of ICL product development long awaited in Britain is the company's DM1 mainframe, developed with Fujitsu of Japan. The much-delayed machine was finally launched in late April this year.

ICL has already revamped its VME mainframe operating system to cater to the DM1 and a second more powerful machine called the Estriel. The VME's new look focuses on local area networking and facilities for CAFS, ICL's fast disk search add-on that is now seen as a key selling point for ICL mainframes.

At the small end of the scale, the One-Per-Desk (OPD), a combined terminal, pc, and handset, debuted late last year. Here, the tie-up with STC already seems to have paid off, since STC's old friend British Telecom is a big customer for the system.

ICL has also made personnel changes. Robb Wilmot has been replaced as managing director by marketing man Peter Bonfield. Wilmot himself, now chairman, works part-time for the company. Some view the STC takeover as a testimony to Wilmot's success in rebuilding ICL since the start of the decade.

But the real test of the company has yet to come. Overseas business was flat in 1984. Like most European manufacturers, ICL has been unable or unwilling to capitalize on the dollar rate by upping U.S. exports. What's more, the DM1 and Estriel machines are crucial to ICL's future. IBM U.K. has been chasing ICL customers hard, and if the U.K. company starts to lose its 2900 series mainframe base in the transition to the new systems, Sir Kenneth will wish he hadn't gone shopping in 1984.

Revenue figures are in millions of dollars. Each increment represents $100 million.

21

NIXDORF COMPUTER AG

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Heinz Nixdorf, the autocratic founder and chairman of Nixdorf Computer, finally decided to loosen his financial grip on the fast-growing German firm. For the first time in its 33-year history the company made a public offer of 20% of its stock on the German exchanges. Not suprisingly, the shares were snapped up by investors who have watched the company grow like Topsy over the last few years. Those same investors were even more enthusiastic when Nixdorf announced its 1984 results. Revenues totaled roughly $1.15 billion (DM3.3 billion), a 21% increase in local currency. The order backlog was up 21% and income was strong enough to keep even the most cynical investor happy.

What impresses these hard-nosed money men the most is the fact that Nixdorf has been able to earn a name for itself outside its home market. Last year German revenues rose 22%, compared to an equally impressive 19% gain in foreign markets. These export sales now account for 50% of the company's annual take.

The European markets still provide the bulk of its export business. But business is getting better in the States for Nixdorf, one of the few European companies that's really been successful in America. Nixdorf's U.S. subsidiary, which made its first profit back in 1982, now provides over 10% of sales. The German company is also building up its operations in South America and Asia. That global spread makes Nixdorf one of Europe's most international dp firms.

Nixdorf broke new ground on the product front in 1984. At the Hannover Fair, the company announced two new families of multistation systems, the 88BK office range and the 8832 fault-tolerant minis built by Auragen Systems in the U.S. It also expanded its 8870, 8890, and 8860 minis.

Unix will probably be supported on many of these ranges in the next year or so. Nixdorf, which feels the AT&T operating system is the key to future software development, now has more than 200 people using Unix at R&D centers in the U.S., Holland, and Germany. It also became part of the European Unix group earlier this year.

During 1984, the company continued to develop expert systems software and came up with a new software tool called TWAICE, an acronym for the modestly-named True Wisdom, Artificial Intelligence and Computerized Expertise product. TWAICE is designed for work in complex technical fields.

Much of the company's product concentration is now in communications. Over 200 Nixdorf 8818 digital PBXs have been sold since 1981. The firm is also involved in helping the German PTT set up the Bigfon digital network. It also unveiled the Digifon intelligent digital telephone handset last year.

Product development costs money, and the company upped R&D spending by around 20% to $122 million last year. All the signs say that money will be well spent by a company that's making its presence felt in the dp world.

Revenue figures are in millions of dollars. Each increment represents $100 million.

22

TOSHIBA CORP.

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Toshiba pulled out of a cyclical slump in 1984. After two years in the doldrums, the energy and electronics conglomerate bounced back with a 22% increase in revenues to $13.89 billion (Y3.3 trillion). Despite efforts to increase its relative share, dp revenue remained below 8% of total sales. Nevertheless, Toshiba's corporate commitment to dp remains strong. When the Toshiba staff moved into the new 40-floor corporate headquarters in central Tokyo in early 1984, they plugged into one of Japan's most advanced local area networks. Toshiba calls its approach "hierarchical office automation." That's nothing new. But a corporation actually attemping to create a paperless office environment is news in the conservative Japanese business world.

Toshiba's 1984 products reflected the company's determination on both the OA and telecom fronts. Taking advantage of the AT&T divestiture, Toshiba sold 1,000 digital PBXs in the U.S. last year. The firm's OA efforts are based on its strength in CMOS circuits. Toshiba, which produced samples of a CMOS implementation of Microsoft Corp.'s MSX micro software standard in 1984, still lacks a 32-bit chip required for the next generation of office equipment.

At the high end, Toshiba still doesn't have a mainframe in its product portfolio. Consequently, it is vulnerable to cannibalization of its existing user base by full-service houses in Japan like NEC and Fujitsu. Back in 1971 Toshiba joined forces with NEC to produce the ACOS mainframe series. While Toshiba formally ended the alliance in 1976, it has remained dependent on NEC mainframes and software. Such dependency creates a need for an alternative. One alternative is Unix. Last year, Toshiba moved closer to adopting Unix as a cohesive approach to office and factory dp.

During 1984 Toshiba looked for a way to bolster its limp line of microcomputers. Its solution was to court local micro maker Sord Computer, which was struggling for survival. Toshiba swallowed Sord in early 1985 by purchasing all outstanding shares of the privately held company.

Two other courtships made 1984 an interesting year. IBM Japan and Toshiba considered collaborating on large-scale systems aimed at connecting factory automation systems with IBM mainframes in the office. Despite widespread rumors, the union was never consummated in 1984. Toshiba's other tie-up talks, with AT&T International in Japan, may have seemed like a potential conflict to IBM. That didn't stop IBM, however, from asking Toshiba to oem 1 million 3.5-inch floppy disk drives.

Toshiba wants to market and eventually produce AT&T's No. 5 ESS switch for use in value-added and local area networks. Toshiba also had its eye on AT&T minis and PBXs. AT&T, which has other deals in the works with Ricoh and Olivetti Japan, could find itself offering conflicting product lines through Toshiba.

Revenue figures are in millions of dollars. Each increment represents $100 million.

23

COMMODORE INTERNATIONAL LTD.

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It's not the best business strategy to kill the goose that has laid the golden eggs. Commodore International's chairman, Irving Gould, should have brushed up on his fairy tales before forcing out Jack Tramiel. Tramiel was the founder and guiding light behind Commodore's spectacular rise from sales of about $125 million in 1980 to over $1 billion by 1983.

Tramiel was no saint in his stint as president and ceo. He ruled Commodore in an autocratic fashion, hiring and firing at whim: he's said to have once hired, fired, and then rehired four top executives in a short period of time.

Employees admitted they were scared to death of Tramiel, who nevertheless got the job done. But in early 1984 chairman Gould decided Tramiel should be replaced by a more managerially oriented businessman. In spite of Tramiel's reputation, a flock of Commodore executives exited with him. After a few months and much fanfare Tramiel bought Warner's Atari unit. He has plans to market a new low-priced entry into the pc field by mid-1985. His timing may be off, however.

The mass exodus hit Commodore just as the market for low-priced pcs began to show signs of waning. Consumers were being tempted with higher priced models from IBM and Apple, which offer graphics and more software. By year-end 1984, the damage was done. Commodore's net income for the quarter dropped 94% to $3.2 million, while sales slipped 21% to $338.7 million.

These figures affected calendar 1984 numbers, where total revenues increased a mere 14% to $1.13 billion and earnings fell 20% to $100.3 million. The decline in the last quarter of 1984 didn't bode well for Commodore, which has made its reputation as a mass marketer of low-priced computers, and for which the Christmas buying season is deemed the most important. Upon release of the quarterly report, security analysts predicted the company would have to make some rapid changes.

By February 1985, Commodore had reacted, cutting prices on its Commodore 64 about 24%. These cuts left Wall Street analysts unimpressed. They point out that inventory on Dec. 31 was about $450 million, which must be sold before the company can introduce its new Commodore 128. The introduction has been postponed.

Two products introduced during 1984 were off to less than wonderful starts. The Plus/4 and the Commodore 16 were reportedly not meeting sales projections, and speculation was that the company would abandon U.S. sales of these products while continuing foreign sales.

Commodore is obviously in need of strong management decisions, and its new president, Marshall F. Smith, doesn't have a computer background. He does have a contract for $2.4 million for his first 28 months as president and ceo, so whether he lays a golden egg or just an egg, he'll be richer and wiser.

Revenue figures are in millions of dollars. Each increment represents $100 million.

24

L.M. ERICSSON

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Ericsson Information Systems (EIS) can best be described as a huge development project. Set up by parent LM Ericsson only four years ago through a series of mergers and acquisitions, the Swedish company's revenues reached roughly $1.12 billion (Skr9.29 billion) in 1984, a 25% increase in local currency.

Still in the startup phase, EIS's numerous development projects have taken a toll on the division's profitability. EIS reported a loss of $26 million in 1984, compared to a profit of $31 million in 1983.

Although growth wasn't as good as the company had expected, its products continued to do well. The EIS MD 110 PBX, for example, is now installed in 12 countries, including the U.S. Roughly 28% of EIS's revenues are earned in its home market in Sweden. The rest of Europe pulls in about 62%, while the U.S. chips in less than 10%.

The company is having a tough time in the States, where its Ericsson Inc. subsidiary has racked up a large deficit. U.S. sales have been depressingly slow, with the exception of the MD 110 switch. Its much publicized ergonomics image, which helped it score sales in Europe, hasn't helped the company much in the American arena. In the U.S., for example, Ericsson's new, IBM-compatible pc is called the Ergo-Intelligent Personal Computer, but despite its ease of use—and a touring rock music road show about ergonomics—sales in America have remained slow.

On a brighter note, the company's Alfaskop line of IBM 3270-compatible vdts continues to be a strong seller in Europe. Alfaskop terminals are actually the company's major revenue earners. EIS claims to be in second place behind IBM in vdt shipments in Europe, and to have 15% of the world vdt market. Taken by surprise by IBM's early 1984 announcement of cheap new 3270 models, EIS responded by dropping some of its prices.

During 1983 EIS took over Swedish office equipment manufacturer Facit. This side of the business continued to do well in 1984, although the company still hasn't come up with wares to compete with some of IBM's new office products. This could be a drawback for EIS in 1985.

Another lingering drawback is the firm's deficiency on the minicomputer front. Its only major product in this area, the Series 2000, functions as a controller of bank terminals and peripherals and as a freestanding computer for on-line applications. In the micro realm, EIS became an oem customer of California's Sun Microsystems last year.

EIS's other main weakness is not on the product side, but on the management side. Part of the giant LM Ericsson group, EIS is subject to the same conservative management philosophy that permeates its parent, which stymies the division's ability to make swift responses to market changes.

To sharpen the division's management edge, Rolf Ericsson was replaced in the EIS top spot by Stig Larsson, known to be a hard-nosed executive.

Revenue figures are in millions of dollars. Each increment represents $100 million.

25

TRW INC.

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Even a $6 billion-plus conglomerate like TRW Inc. likes to measure itself against IBM when it's talking data processing.

In its 1984 annual report the company says software developers at its Defense Systems Group "wrote about 10 million lines of software code in 1984, an amount second only to IBM."

Writing software was good business for TRW in 1984, generating $825 million in revenues, up from $760 million in 1983. Overall dp revenues reached $1.11 billion (up from $1.02 billion). Dp revenues accounted for 18% of TRW's 1984 total revenues of $6.06 billion, up from 1983's $5.49 billion.

The Electronics & Space Systems segment was by far the biggest of TRW's three operations. All of TRW's dp revenues are earned in this division. EASS's 1984 revenues were $2.9 billion or 48% of the grand total.

Within EASS, TRW credits its consumer and business credit reporting services with being the fastest growing operations. These use a database on more than 90 million consumers and 8 million businesses to earn $100 million in revenues in 1984, up from $90 million in '83.

During 1984, the company merged these operations with its broadly based financial and real estate information service to create a new operating unit, the Information Systems Group. Headquartered in Los Angeles, the operation has stated its intention to "vault into other attractive information systems markets."

Maintenance and repair of computers and related products continued to be a good business for TRW in '84, accounting for revenues of $180 million, up from $165 million a year earlier.

Space and defense continue to be the forte of the company. (It boasts of its role in putting a man on the moon.) Under terms of the largest government contract it has ever received, with a projected value of $1 billion, TRW is developing the communications payload for the MILSTAR program. It is continuing as a major provider of systems engineering, software, and information processing services for major space and defense programs, including producing software for artificial intelligence projects.

As part of the Federal Aviation Agency's effort to update and improve the Air Traffic Control system, TRW is working on a system to install existing software in new computers for the country's Air Traffic Control Centers.

TRW has long been successful in parlaying its government work into lucrative commercial business, and now it's attempting the same move with local area network technology. It has created an Information Network Division to exploit technology developed during its work on broadband-based turnkey government systems. It already has installed large scale networks for a major Midwest health care center and for the corporate headquarters of a Fortune 100 company.

Revenue figures are in millions of dollars. Each increment represents $100 million.

26

N.V. PHILIPS GLOEILAMPENFABRIEKEN

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After years of running hot and cold about the computer business, the Dutch electronics giant Philips began to look like it was serious about dp last year.

It boosted its minicomputer line, made a determined effort to strengthen its pc range, and further defined its flagship networking strategy. On the organizational side, the company revamped its North American subsidiary and made preparations for merging its data systems and private communications divisions this year.

Dp revenues also looked stronger in 1984, up 12% in Dutch guilders to G3.5 billion ($1.09 billion), and the company is hoping to improve that growth rate significantly. Around 20% of those revenues came from the U.S., but the Philips Information Systems (PIS) subsidiary was finding the market tough and profitability fell drastically. The Dutch parent stepped in and merged the U.S. division with its Canadian office products company, Micom, shedding 55 employees at the PIS head office in Dallas.

Back in Europe, the company joined forces on memory components with Germany's Siemens, another local electronics giant that has recently undergone reoganization of its dp division. With the backing of the Dutch and German governments the two companies have set up the "Megaproject" to develop 1MB RAMs by 1986, and a 4MB RAM by the end of the decade.

Two of Philips' other joint ventures made headway. Its linkup with Control Data Corp. to make optical storage devices resulted in the formation of a new joint company, Optical Storage International in Santa Clara. The first product, LazerDrive—a 1GB, 12-inch exchangeable optical disk drive—was also launched. Philips' joint company in Holland with AT&T, which produces public telephone switches and transmission equipment, also won its first international contracts in Colombia.

On the product front, Philips doubled the power range of its P4000 minicomputer series and added a whole suite of new office-based packages. Philips' pc line also saw new introductions including the P3800 multitasking micro and the P3100, an IBM PC-compatible machine that's sold under license from Corona Data Systems. Philips also gave its support to the European Group for Open Systems Interconnection (OSI) standards and, earlier this year, the European Unix group.

More significant for the future, the company enhanced its all-encompassing networking concept, Sophomation (Synergistic Open Philips Office Automation). The company hopes to use Sophomation products to build its dp future.

Sophomation has already attracted interest from large users on both sides of the Atlantic, but so far has not generated significant revenues for the company. The situation may change since Philips has begun this year to plug some of the gaps in the strategy, introducing the Sopho-Switch digital PBX.

Revenue figures are in millions of dollars. Each increment represents $100 million.

27

NORTHERN TELECOM LTD.

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Northern Telecom continued to confound the industry, making AT&T work hard for its money again in 1984: the successful Canadian-based company is hot on AT&T's heels in the telecommunications equipment market, enjoying brisk growth in the markets for both PBXs and central office switches. In fact, Northern apparently outsold AT&T in the U.S. PBX market and ate AT&T's lunch in the central office switch business. The company's top line reflected this improvement, as corporate revenues for 1984 expanded 28% to $3.33 billion. The bottom line, however, did not keep up, as net income inched forward but 6%, to $241 million.

Northern's business is heavily concentrated in North America. Domestic revenues represent almost 30% of the Canadian firm's total business, but its biggest market is still the U.S. Revenues from the U.S. climbed 50% to $2.8 billion. Early with an all-digital approach to telecommunications—with equipment for both onsite and central office switching—the company captured a sizable portion of the U.S. market for switches bought by the regional Bell holding companies, grabbing the business while AT&T was busy dealing with the aftermath of its breakup. Sales of the company's DMS line of central office switches, which account for nearly half of total revenues, rose 55% in 1984, to $1.6 billion. Meanwhile, revenues for the SL family of digital PBXs surged 38% to $864 million from $627 million in 1983.

Unlike its chief competitors, AT&T and Rolm, Northern Telecom has only a limited line of dp products to complement its PBXs in customer installations. Its line of terminals holds less than 1% of the American market and constitutes only a small part of total revenues. Its most noted terminal product, the Displayphone integrated voice and display terminal, suffered through another lackluster year, as Northern sold about 50,000 units. That was enough to hold on to its 35% market share, but not nearly enough to make up for all the ground it lost since creating the market several years ago.

With its dp products unable to generate big profits and the market for its currently lucrative switching equipment expected to dry up by 1986, Northern has had to turn to other potential revenue sources. In February 1985, it made its latest pitch for the office automation market.

Undaunted by its past OA failures—including $100 million losses by the Integrated Office Systems division—Northern introduced the Meridian DV-1, an integrated voice and data system compatible with Northern's PBXs. While the company denies much product overlap, some industry analysts believed that the DV-1 was not much more than a Displayphone in new clothing. In addition, Northern brought out its Meridian PBX, designed to replace the aging SL family. To bring these products to market, Northern boosted R&D funding to $328 million from $247 million in 1983.

Revenue figures are in millions of dollars. Each increment represents $100 million.

28

MCDONNELL DOUGLAS CORP.

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McDonnell Douglas Corp. spent most of 1984 reorganizing, restructuring, and renaming components of its one-year-old Information Systems Group. It is hoping to grow the ISG from just under a billion dollars today to $4 billion in revenues and $400 million in pretax profits by 1990.

Part of the reorganization involved spinning off the company's internal computing activities from the commercial external computing business. This was done to avoid conflicts that might arise from its dealings with the federal government and to make the commercial side of the house more competitive.

Total worldwide dp revenues for 1984 (from external sources) was $982.8 million, most of it from the United States. The sum marked a 25.7% increase over last year. Corporate profits were up $50 million in 1984 to $325.3 million on total revenues of $9.66 billion.

Corporate president John McDonnell envisions the Information Systems Group becoming the equal third leg of a stool held up by combat aircraft, commercial transport, and information systems. Right now, the ISG leg is on the short side, considering it contributes less than $1 billion in revenue to a $9 billion company.

Last year also witnessed a further integration of the various entities that comprise the ISG. Changes included renaming some of the acquired ISG entities. Most components of the ISG will include the McDonnell Douglas name in them. For example, Microdata, an MDC subsidiary that manufactures minicomputer systems, became McDonnell Douglas Computer Systems Co. The Tymshare name was dropped altogether in favor of McDonnell Douglas Network Systems Co., even though Tymnet was retained as a product name.

The ISG also includes the Computer Technology Group, McDonnell Douglas Health Systems, McAuto, Information Network Services Group, Financial and International Group, Finance and Administration Group, and the National Computer Operations Group. McDonnell Douglas Network Systems Co. had 1984 revenues of $109.2 million. CAD/CAM/CAE accounted for $102.2 million, and the rest of the data processing revenues came from computer services.

As the remote computing industry matures, part of the ISG strategy has been to acquire companies in areas where it was lacking strength. Ultimately, ISG wants to consolidate all its divisions into five or six groups covering vertical markets that can offer solutions to targeted industries.

Sounds good in theory. And, if all goes according to MDC's lofty plans, each year the ISG will contribute an ever larger percentage of corporate revenues. But with the stiff competition coming from many of the vertical markets the company competes in, it looks as if McDonnell Douglas will continue to rely on its combat aircraft and aerospace divisions to fill its coffers for many years to come.

Revenue figures are in millions of dollars. Each increment represents $100 million.

29

AUTOMATIC DATA PROCESSING INC.

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While it hasn't shied away from new ventures, Automatic Data Processing Inc. can thank its time-tested payroll and accounting service offerings for its enviable record of continuing financial growth. The 36-year-old company's revenues have grown more than 10% in every year since it went public in 1961. In calendar 1984, its revenues were $958.3 million, up 17.4% from 1983's $816.5 million, and payroll and accounting contributed more than half of this.

Commenting on the quarter ended Dec. 31, in which revenues were $253.6 million, up from $218.5 million a year earlier, president and chief executive officer Josh S. Weston says, "Stronger than anticipated new account revenue growth in Employer Services [accounting and payroll] offset continuing low trading in brokerage services." Earnings per share in fiscal '84 were up 15% to $2.14 over fiscal '83's $1.86. Analysts say that ADP is likely to continue its healthy growth rates in the coming year. Late this winter, for example, Goldman Sachs predicted an 18% growth in ADP's net income for 1985.

Over the years, the company has added to its basic services and introduced other service products, often through acquisition. Today it provides brokerage back-office processing, stock quotations, time-sharing, automobile collision estimating, and electronic funds transfer products among others. For example, in the past couple of years, ADP has acquired payroll and accounting services from Computer Sciences Corp. and the Security Pacific Bank. And, aiming at a nationwide automatic teller machine network, the company expanded into Illinois and New England by buying two ATM companies.

In the mid-1970s, trying to ward off the threat from decreasing costs in on-site processing, ADP began offering hardware to its customers. It sold what it called its OnSite service based on Digital Equipment Corp.'s DECsystem-2020 machines. Users could install the machines at their offices and tie them into the ADP network for downloading of data, remote maintenance and support, and for backup when extra processing was needed. Now ADP offers IBM PCs as well.

Although its brokerage services business was slow in 1984, the company sees itself as being in the forefront in this field. In February, it formally launched a service to allow users to access such research services as Value Line and quarterly reports of more than 4,000 publicly held companies. In late '84, its Trendsetter system, which uses Convergent Technologies' desktop computers to receive satellite broadcasts of market prices and news, was in use at 200 banks, brokerages, and other companies in the U.S. and Europe. While Quotron currently dominates the market providing stock trading data, ADP feels it has a one-year lead over the newest competitors to announce an entry, IBM and Merrill Lynch & Co., which plan to begin service with their International MarketNet (IMNET) at the end of this year.

Revenue figures are in millions of dollars. Each increment represents $100 million.

30

OKI ELECTRIC INDUSTRY CO. LTD.

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The prince of Japanese peripheral makers posted steady growth in 1984. But future profitability appears more unpredictable than ever because Oki Electric's markets in the office automation and telecom areas are hotly contested.

DATAMATION estimates that Oki posted net profits of $42 million (Y10 billion) in 1984. A good portion of those profits came from U.S. telecommunications sales. An estimated one third of Oki's 1984 sales came from overseas, up almost 40% from the same period in 1983.

Oki clinched an oem contract with 3M Corp. for facsimile machines in spite of stiff competition from close to 25 other Japanese firms as well as Xerox and Exxon in the U.S. Oki is in a fast-paced industry where aggressive price-cutting soon erodes profit margins. Consequently, Oki focuses on a fast product cycle in order to introduce a new model every six months, which can then be sold at a premium. Last year, R&D spending was up 25% to about Y18.5 billion.

The opening of Nippon Telephone and Telegraph Public Corp.'s (NTT's) fiber-optic trunk line connecting Tokyo and Osaka in autumn 1984 improved Oki's domestic sales. Japan's emerging value-added network market—like so many other Japanese markets, both high and low tech—appears to give preference to the family of traditional NTT suppliers: Oki, NEC, Fujitsu, and Hitachi.

Printer sales reached $336 million in 1984 even with an unstable personal computer market. Oki reached an agreement with the Chinese government to produce high-speed fascimile machines in China.

Demand for mobile phones surged in 1984. As a designated supplier for both NTT and AT&T, Oki had an inside track with both Japanese and American cities installing cellular radio systems. Last year also saw the establishment of sales support offices in Europe and Southeast Asia.

Oki also did well with intelligent terminals, which have been popular with domestic banks. In 1984, Oki Electric prepared on-line systems for the Fuji, Taiyo, Kobe, Hokkaido, and Takushoku banks.

Oki Univac Kaisha Ltd., subsidiary of Oki Electric, made plans to produce Sperry's medium-sized Chapparal computer for the U.S. market. The Ministry of Trade and International Industry signed both Oki Electric and Mitsubishi Electric to participate in the manufacture of the Personal Sequential Inference machine for the so-called fifth generation computer project.

Worries about U.S. protectionism prompted Oki Electric to establish overseas manufacturing facilities and sales networks. The merger of five U.S. subsidiaries led to the 1984 creation of Oki America Inc., with a PBX manufacturing facility in Norcross, Ga., which contributed to increased American sales of digital PBXs.

Revenue figures are in millions of dollars. Each increment represents $100 million.

31

GENERAL ELECTRIC CO.

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Last year GE bounced back from a mediocre 1983. The company's earnings increased 13%, from $2.02 billion to $2.28 billion. Sales rose a more modest 4%, from $26.80 billion to $27.95 billion. GE, however, was quick to caution that those sales had to be adjusted to reflect the disposition of Utah International, its massive mining operation, and its houseware business. Casting those two adrift, sales were up 10% for the year. Analysts credited increased consumer sales and improved high-tech business for the positive statistics.

If the GE Information Services Co. (GEISCO) balance sheet is any indication, then high tech was where it was at for GE customers. After a downer in 1983, when revenues fell 8.5% to $600 million, GEISCO did an impressive about-face. Revenues leaped 20% to $725 million, easily the company's best year.

GEISCO used to be the last word in remote computing services (RCS). Now it wants to be the first word in enhanced telecommunications services. The company announced this metamorphosis at New York's Tavern on the Green, so you know it wasn't kidding around.

While not complete, the transition is going very smoothly. Already the operator of the world's largest commercially available teleprocessing network, GEISCO sought further leverage by entering the tenant services business. It hooked up with MCI, Wang, and InteCom. MCI will provide the long distance service, Wang will offer its office information processing systems, and InteCom will provide its third-generation, integrated voice and data PBX. GEISCO will be the single-source provider and integrator of all these services for tenants in office buildings.

Other new products included PC Mailbox, Quick Com for the IBM PC, QUIKLOAD, and a condensed computer version of *USA Today*. And Marknet, GE's internal telecommuncations system since 1968, finally went public.

But these moves paled beside the January '85 announcement that GEISCO and Apple would get it on with an enhanced telecommunications service called AppleLink. Hard on AppleLink's heels was DealerTalk. It will use the Macintosh as an intelligent workstation linked to GE's worldwide telecom network.

Despite its desire to become an enhanced telecommunications company, GEISCO isn't giving up the remote computer services business.

Judging from the revenue increase, the enhanced telecommunications act is playing in Peoria and everywhere else. And according to Robert McCalley, general manager of the enhanced telecommunications products division, there are more rave reviews to come.

"We had no lowlites in '84," he says. "It was an extremely positive year by any measure, and '85 looks even better.".

Revenue figures are in millions of dollars. Each increment represents $100 million.

32

TEXAS INSTRUMENTS INC.

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Despite the worldwide semiconductor slump, lackluster minicomputer sales, and a 16.6% decline in fourth quarter profits, 1984 was a record year for Texas Instruments in net sales billed and earnings per share.

TI blamed the decline in fourth quarter earnings on the cost of increased data systems inventories and the effect of the strong dollar, which depressed the company's foreign results. Profits were also crimped by weakness in the semiconductor industry, which led TI to execute a previously reported plan to lay off off about 2,000 workers. TI has also had a run-in with the government over what the feds call inadequate semiconductor testing: the Pentagon says it has had problems with some of TI's microcircuits.

Corporate revenues were $5.74 billion, up 25% over 1983. Net income for 1984 was $316 million, compared with the company's 1983 net loss of $145.4 million. Earnings per share in 1984 were $13.05, including a gain of 95 cents per share arising from third-party sales of previously written-off consumer products. TI had a net loss of $6.09 per share in 1983 due mainly to its departure from the home computer business.

Worldwide data processing revenues were up 7.5% in 1984 to $860 million from $800 million. DATAMATION estimates that minicomputer sales were flat at $290 million. But microcomputer sales were up 16% to $140 million. Peripherals sales increased to $290 million in 1984 from $270 million in 1983. Maintenance and repair accounted for $100 million in 1984 compared with $90 million in 1983.

TI has been actively marketing its Professional Computer, which has gained some acceptance even though it is not 100% IBM PC-compatible. To address the issue of compatibility, TI has introduced a multiuser microcomputer that will run PC AT software.

Among its product introductions was the Explorer, designed for artificial intelligence software development. While much of TI's talk about AI could be seen as a marketing ploy, the company says it is serious about AI research and that it has real products to show for it, including Personal Consultant software, said to provide artificial intelligence capability on the TI Professional Computer, and a number of software offerings that feature a natural language interface. Initially, the bulk of the software was available only on the TI Professional Computer. Now, the vendor is making more of the software available for IBM PCs and compatibles. The company's software revenues were up 33% to $40 million.

Despite IBM's commanding lead in the pc arena, TI is still searching for ways to attract user attention. As one strategy, it has chosen to put big development dollars into voice recognition technology, hoping to buy some competitive differential. But even if companies ante up for this technology faster than some studies indicate is likely, TI still faces tough times in its bread-and-butter business—semiconductors.

Revenue figures are in millions of dollars. Each increment represents $100 million.

33

MITSUBISHI ELECTRIC CORP.

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Mitsubishi Electric made encouraging gains in the microcomputer oem business during 1984. DATAMATION estimates that personal computer shipments to Sperry Corp. and Leading Edge were at least twice 1983 levels. This helped push data processing revenues up to $817 million (Y194 billion). With a downturn in semiconductor demand, Mitsubishi Electric looked to the embryonic Japanese telecommunications market for sustained growth and diversification in 1984.

A joint venture between Mitsubishi Corp. (an affiliate of Mitsubishi Electric), local software house Cosmo 80, and IBM Japan Ltd. finally crystallized in late 1984. The resulting company, called Advanced Systems Technology Inc., will use software developed by IBM to offer several value-added network services in the Japanese telecommunications market. Mitsubishi Electric itself teamed up with the Communications Satellite Corp. to jointly bid on a Federal Express Corp. contract for satellite dishes. The growing Japanese telecommunications market demand for network multiplexors also attracted Mitsubishi Electric in 1984.

Japan's Institute for New Generation Computer Technology (ICOT) asked the company to manufacture the TTL-dedicated Prolog machine that was developed during the first phase of the fifth generation computer project. If commercial requests for the machine materialize, Mitsubishi Electric is the likely system supplier. These orders would be handled by the project's sponsor, the Ministry of International Trade and Industry (MITI). The company has, in fact, been a key participant in ICOT from the beginning. Like other Japanese semiconductor manufacturers, Mitsubishi Electric is assumed to be developing software tools to automate the VLSI design process. Its affiliated Mitsubishi Research Institute was also reported to be working on commercial artificial intelligence applications during 1984.

Sales of the Melcom small mainframes slumped last year. The 32-bit superminicomputer Melcom 70 MX-3000, however, was an intriguing Unix offering. The company claims the system combines both Unix and real-time applications for control systems. System deliveries, which started in the last quarter of 1984, rapidly leveled off. NEC's competing real-time operating system for its supermini was much cheaper than the Melcom 70 MX-3000 system, which has a base price of $98,039 (Y25 million).

Part of Mitsubishi Electric's 1984 budget went into building a network of affiliated software houses. The company got into a software scandal the year before when it was implicated, along with Hitachi, for stealing IBM software secrets. It appears that profitability of the Computers and Systems division, however, was relatively unaffected.

At the low end, Mitsubishi Electric's MSX home computer showed steady sales in 1984. The company won several oem contracts to produce the MSX machine for European and American markets.

Revenue figures are in millions of dollars. Each increment represents $100 million.

34

STORAGE TECHNOLOGY CORP.

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Optimists will note that in 1984 StorageTek was neither sold nor liquidated. They will also hail the firm's new top management, ceo Ryal Poppa and president Stephen Jerritts. And they will certainly remind you that revenues kept pace with 1983 through three quarters, dipping only in the fourth.

Ah, but what a fourth quarter it was! StorageTek staged the biggest Halloween trick in computer industry history, filing for bankruptcy on that fateful day. Soon after, Poppa and Jerritts were hired. Some critics questioned their credentials even though two of their former employers, Pertec and Lee Data, had rebounded under their reins as users had hoped. What's more, StorageTek lost money and employees with equal dispatch—the money through a variety of outlets and the employees as a direct result of not having enough money to pay them.

When the smoke finally cleared, the numbers were shocking: in the final quarter, StorageTek lost $419.2 million on revenues of $151.9 million; the only mitigating factor was a $279.7 million writeoff of nonrecurring expenses. For the year, the firm lost $505.5 million on revenues of $808.6 million, compared to 1983's loss of $40.9 million on revenues of $886.6 million. Poppa noted, "Our loss should be regarded as putting the past behind us, and providing a base from which we can grow." He said the firm hopes to emerge from Chapter 11 in 1986.

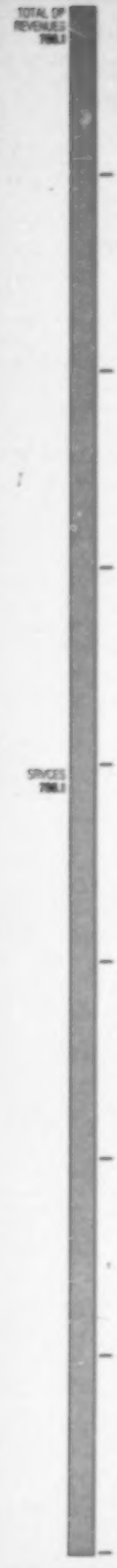
Storage Technology's problems originated almost four years ago—when IBM introduced its 3380 high-end disk drive—and escalated through several late or canceled products, misread markets, technical problems, and powerful competition. By the end of 1982, the firm had begun its near-fatal nose dive.

Through much of 1983 and 1984, company executives kept promising that recovery was only a quarter or two away, but the news kept getting worse. In late 1983, the firm introduced its optical disk drive, but the expensive peripheral never generated the interest StorageTek expected. Then, in January 1984, the firm scuttled its long-delayed plug-compatible CMOS mainframe, running up huge write-offs in the process. Shareholders in the R&D partnership that had sponsored the project sued StorageTek, further compounding its woes.

By October, the firm's financial situation had grown so shaky that its major creditors worried whether they could ever get their money, and pressure from some of StorageTek's banks—particularly the Dresden Bank in Germany—forced the firm to file for protection under Chapter 11 of the federal bankruptcy code. President Naim Aweida left almost immediately, and soon thereafter founder and chief executive Jesse Aweida resigned. Layoffs escalated, the new management waffled on whether to drop the optical drive, and new financing arrangements were set up and then dropped.

The only sure cash the company could count on was from its maintenance contracts, which provided steady revenue throughout the year.

Revenue figures are in millions of dollars. Each increment represents $100 million.



35

GENERAL MOTORS CORP.

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So maybe it wasn't the largest acquisition in history. The Romans, after all, did take over a few pieces of land. But no dp industry takeover has ever been in the same universe as General Motors' $2.5 billion acquisition last October of Electronic Data Systems. And while GM may have swallowed EDS's corporate organization (although EDS retains its own identity), EDS has gulped down GM's entire dp operation.

Not that EDS was doing badly on its own, although 1984 wasn't quite up to the stringent standards established by founder and chairman H. Ross Perot. EDS reported revenues of $786.1 million, a 9% increase over 1983 but less than one third the increase of a year earlier. Net income also suffered, rising 5.5% to $71.2 million, a far cry from the 28% increase reported in 1983.

But none of that fazed GM, which paid more than 33 times earnings for EDS. GM chairman Roger Smith said EDS "is the one company in the world capable of successfully addressing GM system development needs." That's a tough job, but somebody's got to do it.

Even with the paramilitary, no-nonsense approach practiced by Perot, the rescue won't be easy, since GM's dp operation isn't exactly chopped liver. The automaker spends more than $6 billion annually on dp—about nine times EDS's total sales. GM has 27 data centers with 114 mainframes; EDS has five data centers with 17 mainframes.

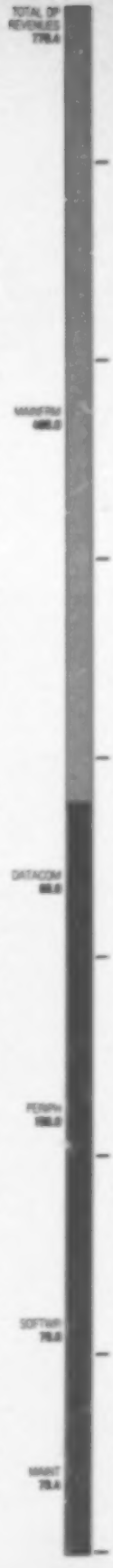
But EDS has proven consistently that it can play with the big boys. Its mainstream business comes from the health care and credit union markets. At year-end EDS was serving 3,100 credit unions with 10 million members; 13 Blue Cross/Blue Shield organizations used EDS's facilities management and processing services. A quarter of its business comes from governments; in 1984, the company signed an eight-year, $350 million contract with the Navy to update its dp facilities, build a nationwide telecom network, and train more than 5,500 personnel.

Taking over GM's dp will further swell EDS's coffers. Some $1.5 billion to $2 billion in dp work is expected to be transferred to EDS this year. Add that to the $2.8 billion in confirmed orders that the company had at the end of 1983 and we're talking some mighty black ink here.

Yet even with all its business acumen, EDS may have a hard time with GM's major dp initiative. The Manufacturing Automation Protocol (MAP) is GM's bid to standardize the factory floor so that it no longer contains "islands of automation."

Because GM's word is law with many vendors who want to keep the company's business, a number of very large corporations have announced their support for MAP. But you can fit what EDS knows about factory automation on a microchip. The company will absorb MAP by osmosis as part of GM's transfer of 10,000 dp and computer workers to EDS. MAP wasn't built in a day, and it may take a while for EDS to learn its way.

Revenue figures are in millions of dollars. Each increment represents $100 million.



36

AMDAHL CORP.

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For Amdahl, 1984 was a year of transition, as the leading American pcm redirected its market focus and entered potentially lucrative new sectors of the industry. As is often the case with transition years, however, the firm's financial performance was unimpressive—particularly when compared to Amdahl's strong 1983 performance. Revenues for the year were flat at $779.2 million, and net income tumbled 22% to $36.4 million. Amdahl does about a third of its business overseas, where the strength of the dollar hurt its earnings.

Stung by poor results early in the year, Amdahl embarked on a series of cost-cutting measures, including the layoffs of 280 employees, and by the fourth quarter the firm seemed to be on an even keel once again. At year-end, the firm had increased its payroll by 400 employees, bringing it to 7,000.

Amdahl maintained its position as the largest domestic alternative supplier of IBM-compatible mainframes and peripherals, but its share of the large systems market continued to decline, dropping one percentage point to 11%. Processors made up about half of the company's business. The mainframe business once again was hurt by product delays, although in 1984 Amdahl finally started shipping new versions of its 580 processors and achieved compatibility with IBM's MVS/XA operating system.

Amdahl seems to recognize the continuing potential for trauma in the mainframe market, and consequently has continued to diversify its offerings. In 1984, revenue from storage systems jumped almost 50%, much of it from leases. A big part of that gain is due to the 6380, the 3380-compatible disk drive that Amdahl started shipping in volume last year. On the negative side, production delays at Fujitsu prevented Amdahl from filling a large General Motors contract on time, threatening the pcm's chances of winning future contracts with the big automaker. In the communications sector, the 4705 series of front-end processors scored strong gains in 1984.

Late in the year Amdahl entered the supercomputer market, selling two machines manufactured by Fujitsu. Amdahl is the third U.S. company to produce supercomputers, but it is the only one whose offerings are compatible with IBM mainframes. Amdahl also diversified in the software arena, throwing its support behind Unix-like environments for mainframes. Its version of Unix, UTS, was introduced, and immediately took precedence over the unannounced Aspen transaction-processing operating system that Amdahl has been developing.

In March, Amdahl's Japanese business partner, Fujitsu Ltd., bought an additional fifth of the company, giving it 49.5% of the company. Fujitsu currently supplies all of Amdahl's mainframes, supercomputers, and storage devices, giving the firm a degree of price protection and access to advanced technology. Fujitsu has said it has no plans to acquire more of Amdahl than it already has.

Revenue figures are in millions of dollars. Each increment represents $100 million.

CIRCLE 43 ON READER CARD →

37

HARRIS CORP.

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Harris, long known as a scientists' and researchers' company, continued trying to shed the horn-rim image and transform itself into a market-driven enterprise. Potential customers may even get the message.

For calendar 1984, sales were up an acceptable 18%, to $2.19 billion from 1983's $1.86 billion. Net income, however, jumped 30%, to $90.7 million. Harris's Information Systems Group, which includes all its dp business, outperformed the rest of the company. Dp revenues on the year rose 26% to $730 million, up from 1983's $580 million. As was true for Harris's other four divisions, the Information Systems Group (ISG) continued to benefit from government contracts. Between 40% and 50% of the company's sales were to the government, a stable business growing by about 20% annually.

The ISG's dp business consists of a minicomputer operation, Lanier Business Products, and a terminals division in Dallas. The two systems sectors performed well, but the terminals division behaved like an errant black hole, swallowing profits from the other two areas and emitting not a photon of good news. Price cuts by IBM and severe internal problems ravaged the division, and in early 1985 Harris decided to dump it.

Sales of ISG's mainstay product line, a family of 32-bit scientific and engineering superminicomputers, were strong. Significant new products were Vue, a coresident VOS and Unix operating system implementation; an Oracle back-end database system; and a 32-bit Unix-based engineering workstation. Breaking with tradition, Harris released a low-end mini, the H-60, designed as a departmental system.

Harris product announcements in early 1985 showed its perseverance in competing in the crowded office automation market. It unveiled HarrisNet, a local area network; Harris PC, a personal computer compatible with IBM office equipment; and the 20-20 network voice and data switch.

Harris's semiconductor operation, while not included in dp revenues, is still an important factor in the industry. The operation is the top supplier of gallium arsenide chips, and signed an agreement with Cray Research to provide the technology for use in Cray's forthcoming supercomputers. The company also came out with a CMOS version of the Intel 8088 microprocessor. Semiconductor sector sales were hurt, however, by the industrywide chip glut at the end of the year.

The communications group did better after several flat quarters, largely as a result of a smaller proportion of sales to impoverished OPEC governments hurt by the strength of the dollar.

Lanier, in its first full year as part of Harris, performed better than it had as an independent company. The business systems supplier, while unable to integrate its products with the Harris line, has apparently been able to teach its new parent some marketing skills to complement Harris's technological and management strengths.

Revenue figures are in millions of dollars. Each increment represents $100 million.

38

TANDY CORP.

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Songwriters declare that the sun has a habit of coming out tomorrow—a comforting thought considering the bleak horizon Tandy has faced through 1984. Dp revenues were down 24% to $719.1 million from $945 million in 1983. While total corporate revenues stayed almost level, rising slightly to $2.79 billion from 1983's $2.66 billion, net corporate income decreased 19.8% to $235.9 million from 1983's $292.7 million.

Chairman of the board John V. Roach blamed some of the uninspiring financial news on damage to foreign sales caused by the strong dollar: sales outside North America accounted for 21% of Tandy's business in 1983 and only 15% in 1984. But maturing products may have been partly to blame. In a 1984 quarterly report Tandy described the villain this way: "Gross margins may continue to be adversely affected . . . as the microcomputer progresses through its product cycle."

As part of a program to put some renewed zip into its balance sheet, Tandy introduced its entry in the IBM PC-compatible race, the Tandy 1000. Launched in December, the machine costs just $1,200. It has a 360KB floppy disk format and can run IBM PC software including MultiMate, dBase III, and Lotus 1-2-3. The product uses an 8088 16-bit microprocessor operating at 4.77MHz.

Unfortunately, Tandy's timing was rotten. Most of the IBM PC-compatible competitors made their debuts in 1983 and have therefore had time to build some momentum in the marketplace. In addition, IBM has been reducing the price of its PC offerings, making it almost impossible for a rival vendor to be sure there's room under the IBM umbrella for profitable sales.

Tandy's piece of the home computer market may prove to be of little help. With IBM's discontinuation of its PCjr, companies are beginning to wonder whether a home computing audience exists. Certainly, sales and revenues are nothing to cheer the heart of a corporate comptroller. Tandy's 1000 (also aimed at the home market), the TRS-80 Model 4, and the Model 100 have all had a disappointing year. Even with discounted prices on the Model 4 and the Model 100, their lack of compatibility with IBM continues to be a major problem.

Exploring new enterprises, Tandy and Applied Computer Techniques PLC have begun a joint retailing venture directed at the U.K. market. The original announcement in December said the new company, AT ComputerWorld Ltd., would open throughout Europe. But after careful study the project budget was cut from the originally estimated $11 million figure to $5.6 million. The main focus is now centered on franchises in the U.K.

Tandy's vertical control of its retail delivery systems continues to be a corporate strength, and Wall Street analysts have suggested that the current drop in the value of the dollar will help international sales and the 1985 balance sheet.

Revenue figures are in millions of dollars. Each increment represents $100 million.

TOTAL DP REVENUES 709.6

39

COMPUTER SCIENCES CORP.

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Computer Sciences Corp., a granddaddy among systems houses, was known as a highflier in the '60s and a hard luck company in the '70s. So far the '80s look solid but uninspiring.

The company celebrated its 25th birthday in 1984, a bright spot in an otherwise lackluster year. Revenues of the company, which calls itself the world's largest independent computer services company, bogged down in '84. This was due in part to the pressures felt throughout the services industry because of the burgeoning microcomputer. More specifically, however, the downturn could be blamed on CSC's failure to win the kind of $100 million plus government systems contracts that had bolstered its bottom line in earlier years.

Corporate revenues dipped from $718.9 million in calendar 1983 to $709.6 million in '84. While earnings were up from $15.9 million to $27.6 million, the increase was due, in large part, to the sale in December of a wholly owned subsidiary, PAID Prescription Inc., Fair Lawn, N.J., to Porex Technologies Corp., Elmwood Park, N.J., for $28 million.

Not counting the extraordinary income generated by the sale, operating income for the fourth calendar quarter (the firm's third fiscal quarter) was $9.9 million compared with $12.1 million in 1983.

SRVCES 709.6

Systems, traditionally the company's largest revenue-producing sector, was the big sufferer from the lack of major government contract wins. Its revenues in the calendar fourth quarter were up a modest $7 million, to $127 million from $120 million, bolstered by a $14.1 million contract for an FAA system in October and a $18.8 million GSA contract in December, running three and four years, respectively.

The Information Network Services Group, which operates Infonet, CSC's value-added network, suffered in '84 as did others in its business, from the continuing displacement of remote services by dedicated computer systems. CSC is trying to redirect its network toward a communications services value-added utility business, developing new databases and services to interface with client computers.

CSC has been trimming Infonet costs. Staff has been reduced, and where there were three data centers there now are two. Software development programs for new products for traditional timesharing services have been terminated as well.

The strongest growth for CSC in 1984 came in its industry services sector. Reduced earnings from a contract with the State of California to administer its MediCal program were more than offset by gains from a National Flood Insurance Program and by revenue gains by Associated Credit Services, a Houston-based credit reporting subsidiary, which expanded late last year with the acquisition of the Merchants Association of Indianapolis. The company said this was part of a series of planned acquisitions. Corporate acquisition activity is expected to increase following the hiring early this year of acquisition specialist Larry Parkus from AT&T.

Revenue figures are in millions of dollars. Each increment represents $100 million.

TOTAL DP REVENUES 642.8

40

PRIME COMPUTER INC.

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A healthy new element was evident in Prime's business last year: aggression. Product announcements and hiring picked up strongly. And for the first time in recent years there was some real bite evident in the company's pricing. The net result was that total revenues climbed 24% to $642.8 million. More impressive after 1983's poor showing, earnings jumped 83.6% to $59.7 million (including a $10.6 million nonrecurring gain).

Prime's overseas business grew at an even healthier rate, 29%, and contributed 39% of total revenues by year-end—one of the largest percentages by a dp company, and reminiscent of IBM's own 60/40 split. According to Prime, 27% of its sales are in Europe, and another 12% comes from other offshore areas including the Far East. The company's overseas focus left it more than unusually prone to the strength of the mighty dollar. According to its own internal estimates, Prime's international business would have grown at 40% were 1983 exchange rates in effect throughout 1984.

MINI 470.1

For some time now the company has been heavily criticized for its aging midrange systems and for its conservative pricing. Management moved to dispel both perceptions last year. New middle-of-the-line 9650 and 9750 minis were announced, the former a TTL machine, the latter benefiting from leading-edge ECL and pipelining technology. Prime addressed its low end earlier in the year: its new 2550 is 45% faster than the machine it replaced, the three-year-old 250-II.

Toward the end of the year, the company embarked on a new, more aggressive pricing strategy. Since October the company has slashed the price of its Medusa CAD software (which it now co-owns with Computervision and markets on a worldwide basis) by 40% and reduced the price of the 2250 by 25%. Consequently, from the third quarter to the fourth Medusa licenses jumped 32% and Prime sold 15% more 2250s. In January of this year, Prime replaced its line-topping 9950 with the 9955, offering up to 60% more performance for 6% less cost. The company said that twice as many terminals can be hooked up to the new 4 MIPS machine as could be served by the 9950.

The company was also more aggressive in its hiring. Total sales personnel grew 11% and 12% in the final two quarters. Increased staffing was also heavy on the customer support side. Since 1982 the company has doubled its personnel in this crucial handholding area. Support revenues responded accordingly, soaring 64% to $163.7 million, some 25% of the company's total business.

MAINT 163.7

Although Prime's aggressive pricing actions should lead to an improvement in its growth rate, the benefits may be only short term without further actions to improve its relative market position. The company is comparatively weak in the areas of workstations and office automation, and is expected to tackle these shortcomings this year.

Revenue figures are in millions of dollars. Each increment represents $100 million.

41

ITT CORP.

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Still trying to get in step with the high-tech times, ITT remains weak on the dp product side. For example, the corporation's Courier Terminal Systems subsidiary last year began shipping the Xtra, its IBM PC lookalike, but shipping doesn't always equate with selling, which was sluggish last year despite Computerland distribution. DATAMATION estimates that micro revenues only reached $30 million last year.

In mid-'84 ITT ordered a reorganization of its Communications and Information Services division, hoping to stop a trend that had the division—once one of the corporation's most profitable—chewing up a sixth of ITT's corporate capital resources to produce only 4% of its revenues.

The picture was not much brighter from the peripherals point of view. DATAMATION estimates that sales in this sector were off 12.5% to $350 million. Stronger competition forced ITT's printer-and-memory maker Qume to close its San Jose manufacturing plant, putting some 600 employees out of work. Also on the peripherals front in 1984, ITT unveiled the 9232 IBM-compatible terminal.

To fund its drive for more power in the dp market ITT has been putting up some of its lackluster subsidiaries for sale. Along with the sales, though, have come some surprising dp purchases, especially in Europe, where ITT has been hurt by the strong dollar. ITT's biggest dp deal in Europe last year was for the bankrupt Christian Rovsing, the largest computer and networking systems company in Denmark. ITT's Danish subsidiary Standard Electrik Kirk bought 44% of the systems division of the Rovsing company, which pulled in $166 million in European dp revenues in '83.

The U.S. multinational also went shopping in West Germany, where it bought 49% of Computer-Technik, a $38 million manufacturer of minicomputers and micros. Earlier last year, ITT took a 37% stake in Holland Automation International, a $6 million Dutch company that specializes in software for pc-compatible micros and banking minis. In Britain, ITT trimmed its stake in Standard Telephones & Cables prior to STC's buy into U.K. mainframer ICL.

Europe has traditionally generated more datacom than dp business for the diversified company. ITT has launched a major PBX push in Europe, where it's done a much better job selling switches than it has on its home turf. (ITT, which agreed last year to distribute Hitachi's digital exchanges in the U.S., has less than 2% of the domestic switch market.) Although ITT has a strong following among European PTTs, few observers of the telecom scene feel the company will ever recoup the estimated $1 billion it has sunk into its showcase System 12.

The conglomerate may also be sinking billions into buying a major dp company. Takeover talks with Sperry earlier this year were called off, but ITT still has an acquisitive eye. Nevertheless, industry watchers feel it will take more than mere money and mergers to get ITT on solid ground in the dp domain.

Revenue figures are in millions of dollars. Each increment represents $100 million.

42

TRIUMPH ADLER AG

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The transition from a sleepy typewriter company to a fast-track office systems firm isn't easy. That's exactly what Germany's Triumph Adler, a subsidiary of car maker Volkswagen, is beginning to learn. In fact, if it weren't for its U.S. subsidiary, Pertec, TA might not have made it into this year's DATAMATION 100.

Pertec, which has strong peripheral and computer sales in the U.S. and South America, was consolidated into Triumph Adler's annual figures in 1983 and last year contributed 78% of the company's $631.6 million (DM1.80 billion) dp revenues. The two companies' combined losses in '84 were even bigger than the $20 million deficit in 1983. These losses were not good news for parent company Volkswagen, which began applying a lot of pressure to its TA offspring. Last summer Wolfram Nadebusch, the former head of Volkswagen Nigeria, became TA's new chief executive. To stem the flow of losses, Nadebusch began streamlining the company's German manufacturing operations and splitting up production. These moves, which helped improve production, also created worker turmoil. Last year, many of TA's manufacturing employees went on strike for seven weeks in an attempt to get a 36-hour work week.

Triumph Adler's dp product line consists of the Alphatronic range of office systems and microcomputers, and the 1600 series minicomputers. Both the Alphatronic P60 and P50 micros are IBM-compatible and have interfaces for the German Bildschirmtext videotex system. Last August the company added three new models to its 1600 mini line. Triumph Adler also sells an Ethernet-like local area network called Ergonet.

The company expanded its product line with the introduction of the M32 multi-user system that's based on a Xenix derivative called TAnix. This is partly the result of a deal Triumph Adler struck with Microsoft last year.

Triumph Adler's micro and mini wares have been moderately successful outside the company's home market, which accounted for about 50% of its 1984 dp revenues. The French, British, and Italian markets provided most of the remaining sales. After years of losses, Triumph Adler's U.K. arm finally made a profit in 1984.

Pertec has faired much better than Triumph Adler. One thing that helped was the 3200 and 4200 machines that are based on the Motorola 68000. Triumph Adler was so impressed by the machines that it pumped $45 million into the U.S. company to cover R&D expenditure during 1984 and 1985.

NCR's Applied Digital Data Systems (ADDS) was also impressed and tried to buy Pertec last fall, but the deal never went through. Some say the reason was that Volkswagen wanted to hang on to the U.S. company. Other industry watchers claim that ADDS balked for fear Pertec would be too tough a company to turn around in a reasonable amount of time.

Revenue figures are in millions of dollars. Each increment represents $100 million.

43

MOTOROLA INC.

Motorola Center
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As an official sponsor, Motorola wasn't about to be left out of 1984's Olympic excitement, providing communications systems for both the winter and summer games. The company went for its own gold in '84 and broke the tape, with both sales and earnings hitting all-time highs. Total revenues were $5.53 billion, up 27.8% from 1983's $4.33 billion. Net earnings before the addition of a $38 million DISC tax break rose to $349 million, up 43% from 1983 net earnings of $244 million. The impressive gains were deflated, however, by Motorola's ballooning debt load. Corporate debt soared to $642 million, more than twice the $270 million in 1983.

The Information Systems Group (ISG) showed respectable gains, with sales up 20% from 1983 and new orders advancing 14% through the year. The group turned 1983's small operating loss into a small operating profit in 1984. ISG's four divisions—Four-Phase Systems Inc., Codex Corp., Universal Data Systems, and International—expanded in 1984 with new products in the data transmission and ddp areas. Direct sales and service operations in international markets also looked more promising.

Four-Phase went through a reorganization in 1984. It streamlined its management and administrative systems, consolidated its field sales and service operations, and implemented a product management organization. Five top-level executives were recruited to help implement the changes and run the company. In addition, Four-Phase introduced the series 6000 front-office systems, based on Motorola's 68000 microprocessor and Unix, with software for word processing, spreadsheets, software development, database management, and data collection.

Codex introduced several new products, including the 2600 series of 16.8Kbps modems. Codex's new 6240 Digital Transmission Multiplexer is a time division multiplexor designed to integrate voice, data, and video transmission over T1 (1.5Mbps) circuits. Development of a new series of microcomputer modems kept Universal Data Systems busy. The FasTalk series includes 300bps and 100bps standalone models and a 1,200bps plug-in card for IBM PCs.

Internationally, Codex equipment was purchased for use in large private networks in West Germany, the U.K., Belgium, Portugal, Korea, and Turkey. Mobil Oil of West Germany got behind the Motorola banner as well by signing a contract for 10 Four-Phase series 5000 systems.

In the communications sector, the ring of the cellular telephone dulled for Motorola in 1984. After a strong first half, operating losses for the phone business increased with the delay in several major cities of licensing and construction permits. Motorola also blamed some competitors, charging in an antidumping petition with the U.S. International Trade Commission and the Commerce Department that rivals sold Japanese cellular products at "less-than-fair value." A decision is expected this year.

Revenue figures are in millions of dollars. Each increment represents $100 million.

44

DATAPOINT CORP.

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Still reeling from an accounting scandal in 1982, still experiencing delays in development and marketing, with customer loyalty on the wane, things couldn't have gotten any worse for Datapoint in 1984. Then they did. On Dec. 10, the *Wall Street Journal* reported that corporate raider Asher B. Edelman had acquired a chunk of Datapoint stock with the intention of buying more, taking control of the company, and selling it off bit by bit.

The stock went up, orders went down. Management turnover increased, employee morale decreased.

Then things got worse.

The company announced a $15.9 million loss for the quarter ended Jan. 26, 1985, its first quarterly loss since 1982. Earnings for the calendar year also plummeted, to a loss of about $900,000, down from 1983 earnings of $20.6 million. Revenues were up only 6.2%, to $589.2 million from $554.4 million.

Datapoint had begun 1984 with guarded optimism. The company increased its controlling interest in its French subsidiary, Datapoint Matra Informatique, to 100% and became a large-scale customer of, and investor in, Charles River Data Systems. It implemented a huge stock repurchase plan. It opened up ARC network, its pioneering proprietary local area network, in an attempt to recapture lost market share. It introduced the Convergent Technologies-built Vista-PC and the Datapoint 3200, a 32-bit supermicro.

In June Datapoint reached an agreement with the Securities and Exchange Commission, terminating the investigation of the 1982 accounting scandal, by admitting nothing but, at the same time, promising never ever to break the rules again. It reported record earnings for the fiscal fourth quarter ended July 28. It even supplied a vote-tallying ARC network for the Democratic National Convention.

But, like the Democrats, Datapoint should have been more guarded with its optimism. The new products didn't take off and slashing prices on the Vista-PC in response to aggressive IBM AT pricing didn't help. International orders (representing a third of Datapoint's business) were down. And by the end of the year, Edelman's takeover bid had withered what was once thought to be one of the strongest customer bases in the industry.

For three months, management fought. Nobody wanted the company to be put on the block, piecemeal, to be stripped of its strongest and most profitable units. Suits and countersuits flew. Then the huge quarterly loss was announced. In March, a "reconstitution" of the board of directors was announced, ceo Harold E. O'Kelly stepped down, and Edelman took his place.

Could things get worse? Apparently they could. According to the annual DATAMATION/Cowen & Co. survey on user spending, the number of users who anticipate reordering Datapoint ddp systems, once Datapoint's strongest suit, is a big zero.

Revenue figures are in millions of dollars. Each increment represents $100 million.

TOTAL DP REVENUES 565.9

45

TANDEM COMPUTERS INC.

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Tandem Computers Inc. continued to plug along through 1984 in a nonstop—if decelerating—fashion. There still appeared to be glory enough for all as Tandem's data processing revenues were up 25.6% to $565.9 million—a good year by anyone's reckoning, even if it pales compared to the 34% and 41% gains shown in 1983 and 1982. The largest chunk of Tandem's money came, not surprisingly, from minis: $447.1 million, with another $88.8 million flowing in from maintenance and repair contracts.

Still the dominant leader in fault tolerant systems, Tandem started shipping product in 1976 and had the market virtually to itself until 1980. While it has since yielded share to others—most notably Stratus—some analysts see the market for fault tolerant machines continuing to grow at 30% for the rest of the decade. So far, Tandem is clearly the leader of the pack. To maintain that position, the company hiked up its R&D expenditures in 1984 nearly 40%, to $56.8 million. A big chunk of that went toward achieving high-level SNA compatibility with IBM machines. The payoff was visible in the firm's profits for 1984, which markedly outperformed revenues. Net income for the year was up a hefty 39.1% to $46.9 million.

MINI 477.1

Wary of growing lackluster by selling largely into its well-entrenched installed base, Tandem sought to expand its horizons. The firm stepped up its campaign to acquire new third-party software, slashed prices on its low-end NonStop I and II gear, and offered heftier volume discounts to oems.

Tandem also entered into a series of major new agreements. It won a substantial order from Federal Express for gear to be used in the Zapmail program, entered into a joint venture to market airline reservation systems and allied airline software for end users including Scandanavian Airline Systems, and signed an accord with Indiana Bell to market order-entry software that the phone company developed for its own Tandem installation.

Tandem also came to market with new hardware during the year, led by its line-topping NonStop TXP system and the 6100 communications subsystem. Two smaller terminals were added to its 6530 line, offering 3270 emulation and voice input. Also introduced was the Dynamite workstation, driven by an 8086 chip running MS/DOS for local processing.

Tandem's money matters were clouded late in the year as the Securities and Exchange Commission charged it had overstated its fiscal 1982 revenues. Without admitting or denying the charge, Tandem agreed to annual reviews of its accounting practices for three years.

But clouds have appeared in the future of Tandem's lock on first place in the fault tolerant arena: IBM's deal with another strong fault tolerant vendor, Stratus, will—at the very least—raise the cost of staying on top in nonstop computing. If AT&T ever gets its marketing as bug-free as its time-tested fault tolerant systems, the market could be turned upside down.

MAINT 88.8

Revenue figures are in millions of dollars. Each increment represents $100 million.

TOTAL DP REVENUES 556.3

46

COMPUTERVISION CORP.

MAINT 86.1

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For Computervision, a pioneer in the CAE/CAD/CAM market, 1984 was anything but smooth sailing. Even so, for the first time Computervision posted revenues of over half a billion—$556.3 million. This marked an increase of 39% over its 1983 revenues of $400.4 million. On the down side, this was also the first year that Computervision's shares traded at a lower price than those of its main competitor, Intergraph.

Profits were up a relatively modest 17%, to $41.4 million in 1984 from $35.3 million in 1983. As the competition grows tougher, Computervision has had to become more aggressive. Long criticized for building its own hardware instead of buying it (as Intergraph does), Computervision made its first oem agreements in 1983, with IBM and Sun Microsystems. This year, it's gone a few steps further.

First, it added two new product lines, the CDS 3000 and CDS 5000. The 3000 series is a 32-bit workstation for use in standalone or networked design and engineering applications. The 5000 is a high-end CAE/CAD/CAM system for dealing with large amounts of data and accessing corporate databases. The 5000 is based on IBM 4300 processors.

As a second step, in July, Computervision revealed its plans to market Medusa software for CAD/CAM applications, using DEC's VAX computers under an oem agreement with DEC. Medusa is a design and modeling system developed by Cambridge Interactive Systems Ltd., a Computervision company since 1983.

CAD/CAM 481.2

Finally, near year-end, Computervision announced a major market-oriented organizational realignment designed to better position the company for the future. The concept behind the realignment is "decentralized operations organized under major groups to serve specific industries." Five self-contained groups were organized—the North American Group, the International Group, the Business Development Group, the Product Group, and the Operations Group—each under the direction of a former Computervision division general manager.

In addition, the company entered a joint venture with the Metheus Corp., Hillsboro, Ore., now called Metheus-CV Inc. The new company will design, develop, and market CAE workstation products, and will combine products and personnel from both the companies. Earlier in the year, Computervision also acquired the Organization for Industrial Research (OIR), Waltham, Mass., a major supplier of CAD/CAM software.

Evidently, Computervision is taking a fighting stance. Some analysts predict that IBM will eventually dominate this market, and that Intergraph and Computervision will have to slug it out for second place. So far in 1985, the market omens for Computervision have not been good. Early this spring it laid off almost 1,000 workers, 14% of its total work force. Analysts suggest that its problems are due to fears that some of its products, now made by other suppliers, won't be able to communicate with one another.

Revenue figures are in millions of dollars. Each increment represents $100 million.

47

NATIONAL SEMICONDUCTOR CORP.

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In 1984 we're almost talking wild, giddy, pie-in-the-sky success for National Semi. Every time the company wrote down a number, it set another record. Dp revenues, which had jumped 16% in 1983, rose 29% to $550 million. Mainframes, supplied by Hitachi and marketed by the National Advanced Systems division, leaped 25% to $250 million. Peripherals increased 33% to $200 million, and maintenance and repair rose 33% to $100 million. Total corporate revenues rose 31%, to $1.82 billion. R&D also got its money's worth, rising 38% to $138.5 million on a corporate basis and 12% to $27.1 million for dp purposes. Net corporate income jumped an astounding 528%, to $84.2 million from $13.4 million.

So much for the good news. The bad news is that the semiconductor market stalled toward the end of the year. That shouldn't affect NAS's computer business, though. The company expects big things from its IBM-compatible AS/XL family. Sensing a potential IBM weakness—its delay in marketing the Sierra line—NAS hopes to seize the time: it wants to bring its 28MIPS uniprocessor AS/XL model 60 and 50MIPS dyadic model 80 to market at least a year earlier than IBM's models 200 and 400. Current machines are also selling well. Announced a year ago May, the AS/8040, 8050, and 8060 have shipped in "large quantities," the company said. The AS/6600 and AS/9000 lines also sold well.

National expects big things from its 32000 series microprocessors. A 32-bit cpu, the NS 32032, was introduced after more than $45 million had been invested in R&D. But that didn't stop it from having a few problems in getting up to speed. Even though Motorola and AT&T are the only other companies with comparable products, the 32032 has barely made a ripple, much less a splash. "It's just not a big deal yet," says John Geraghty of First Boston.

Neither is the company's Unix product, although it may become one. NAS in July delivered Unix System V Release 2.0 for the 32000 microprocessor to AT&T. When AT&T validated the product early this year, that, according to the company, made it the only semi maker to implement Unix V so far.

Life became much easier when NAS got off IBM's hit list. The company had been accused of stealing trade secrets, with IBM claiming low-end damages of $750 million and high-end injury of $2.5 billion. The suit was settled in January 1984. In return for IBM not getting a penny, NAS promised not to solicit, use, or distribute any IBM-protected products.

National also escaped the Defense Logistics Agency's blacklist. After a 40-count indictment, the company had been convicted in March of improper military-aerospace testing procedures. The DLA then proposed to debar the company from further DLA business. It never came to that, as the parties settled their differences in August and National paid the government $247,000.

But with the profits it had, who noticed?

Revenue figures are in millions of dollars. Each increment represents $100 million.

48

DATAPRODUCTS CORP.

6200 Canoga Ave.
Woodland Hills, CA 91365
(213) 887-8451

Dataproducts had another big year in 1984: revenues, net income, earnings per share, and orders all hit record highs.

The company continues to be the world's largest independent manufacturer of computer printers, printer supplies, and components. Last year it recorded $484.5 million in worldwide revenues, up a substantial 41% from 1983. Of this total, 13% came from Europe, 5% came from the Far East, and the bulk of it, 82%, came from North America. Net income increased a whopping 87% to $35.8 million, from $19.1 million in 1983. Just two years ago the company net income had declined by 50%.

An improved economy played a large part in Dataproducts' improved sales in both the high and low ends of its product line. Orders in 1984 increased by 39% over 1983. Two important new oem contracts were signed with IBM and Burroughs. Dataproducts continued to expand its worldwide customer base with distributors and dealers throughout the world serving systems houses, retail dealers, and end users with its low-end products.

The DP-55, a high-performance daisywheel printer, was put into volume production in 1984. In addition, a multiyear contract was signed with Wang for the DP-55, giving a big boost to the company's daisywheel production.

The company continued to expand its product base, a process begun in 1978, when it offered only line printers. New-product investment was greater than in any other year, amounting to $31.2 million. Waiting in the wings and slated for 1985 release is a state-of-the-art laser printer.

Dataproducts formed a joint venture with Grupo Latino Mexicano in which printers, assembled from components made in both the U.S. and Mexico, will be marketed to companies located in Mexico.

Increased sales required yet another manufacturing facility at the company's Milford, N.H., plant, which it acquired from Integral Data Systems in 1982. It is now known as Dataproducts Serial Printer Group/Milford. When the new facility is completed in the latter part of fiscal year '85, the plant's present capacity will be tripled. The company also has manufacturing facilities in southern and northern California, Connecticut, New Hampshire, Ireland, Hong Kong, and Puerto Rico.

Reflecting the growth of the company, the board of directors was increased from nine to 11 members, and 300 additional employees were hired to reach a total of 5,800 employees worldwide.

Charles A. Dickinson, Dataproducts' president and ceo, attributed his company's excellent year to the continued success of its band printer product lines as well as the strong performance of the newer serial printer products.

In addition to computer printers, supplies, and components, Dataproducts also produces data communications and aerospace equipment.

Revenue figures are in millions of dollars. Each increment represents $100 million.

49

C. ITOH ELECTRONICS INC.

5301 Beethoven St.
Los Angeles, CA 90066
(213) 306-6700

Giant Japanese trading companies generally remove a lot of the pain and frustration usually experienced by American firms selling and servicing high-technology products in Japan and, in turn, open U.S. markets for Japanese companies. C. Itoh Electronics—a subsidiary of C. Itoh & Co. Ltd., the world's third largest trading company behind Mitsui and Mitsubishi—did more than $443 million last year selling high-technology Japanese products in the U.S. and exporting U.S.-made products to Japan.

That's a small percentage of the more than $60 billion that the giant trading company did last year through its worldwide operations in 86 countries—an increase, by the way, of $8 billion over the year before. The subsidiary's dp revenues, however tiny in relation to the parent, recorded a sizable increase over 1983, and they are still growing. Overall, C. Itoh Electronics pulled in $531.1 million in 1984 revenues, with data processing content accounting for all but $8 million of the $90 million increase from the previous year.

The electronics operation has been under way for nearly a dozen years. More than two dozen U.S. firms use C. Itoh Electronics to sell their products in Japan through two C. Itoh affiliates there—C. Itoh Data Systems Co. Ltd. and Century Research Center Corp. Products representing such fields as data processing, office automation, CAD/CAM, factory automation, software, and computer services are included. Among the U.S. companies selling in Japan through C. Itoh are General Electric's Calma division, Hughes Aircraft, MDS Qantel, Digital Communications Associates, and Sytek.

Japan-made products are sold in the U.S. through C. Itoh Electronics and two subsidiaries, CIE Systems and CIE Terminals. CIE Systems sells microcomputer business systems and software. CIE Terminals sells a variety of graphics terminals that are compatible with Digital Equipment Corp. and Tektronix offerings, as well as with a family of 300- and 600-line-per-minute printers. C. Itoh Electronics sells printers, monitors, floppy disk drives, handheld data-entry devices, a terminal that is compatible with IBM's model 3178/3278 terminals, electrostatic plotters, and portable facsimile telecopiers.

Key to the company's strategy is its goal not only of selling these products, but also of servicing them, stocking spares, and engaging in market studies. Company officials say they want to appear to be a domestic company in both the U.S. and Japan. C. Itoh Electronics has remained stable with steady growth since its inception in Los Angeles in 1974. It and its two subsidiaries—CIE Systems and CIE Terminals—are headed by Mark Takeuchi, a graduate electrical engineer who was named president in 1976.

The Electronics company's activity is not affiliated with C. Itoh Digital Products of Torrance, Calif., which sells printers, plotters, and utility software. That operation is also a subsidiary of the trading company.

Revenue figures are in millions of dollars. Each increment represents $100 million.

50

TELEX CORP.

6422 E. 41st St.
Tulsa, OK 74135
(918) 627-1111

In the rough-and-tumble terminal business, Telex Corp. managed to have a great 1984. Record worldwide corporate revenues totaled more than a half a billion dollars. Dp revenues were twice 1983's levels. These dp sales and a change in the company's European marketing policy contributed most to the vendor's success.

The Tulsa, Okla.-based vendor of computer peripheral and communications equipment posted revenues of $523.8 million in 1984, a $200 million increase over the previous year. Net income was up a healthy 40.8%, $13.8 million over 1983 to $47.6 million.

The acquisition of Raytheon's Data Systems Division gave Telex a financial boost as well as a strong entry into the airline terminal market. Raytheon, with 50% of the commercial airline business, sold its ailing terminal division (losses said to exceed $100 million) to Telex for $200 million. Telex, which picked up Raytheon's customer base and accounts receivables, will now attempt to put the former Raytheon division back on course. Word on Wall Street has it that integrating Raytheon Data Systems into Telex has produced income and results that have surpassed the company's budgeted expectations.

On the international front, Telex was precluded for several years from selling directly to Europe under a 1978 agreement by which Telex's European subsidiaries were sold. Since restrictions were lifted in 1981, Telex has been marketing directly to Europe. But in its third year under the new rules, the company still derives only 19% of its revenues from the international market. Geographically, the United States accounts for 81% of sales, West Germany 7%, Australia 6%, the United Kingdom 4%, and France 2%.

On its home front, with Raytheon now an in-house strength rather than a competitor, Telex has a sure hold on the number two market share for 3270 terminals. While IBM still occupies the top spot with a 62% share, Telex has 18% of the business; ITT Courier is in third place with 10%. Despite the encouraging numbers, however, low margins, cutthroat competition, and increased terminal marketing efforts by IBM will keep Telex on its toes.

Not surprising is the fact Telex upped its research and development spending by $7 million to $21.6 million. The company says it is spending more than $1.3 million per month on product development and engineering to keep a competitive edge.

In a move to open new markets, Telex has sought out what it calls "affiliations" with other computer vendors. It joined with Burroughs Corp. to form Plasma Graphics Corp., which designs flat displays using gas plasma technology. Another deal was struck with MAD Computer Inc. to develop an advanced IBM-compatible microprocessor. According to Telex, the company is not straying too far from its roots and adds that both deals complement its basic terminal business.

Revenue figures are in millions of dollars. Each increment represents $100 million.

51
RACAL ELECTRONICS PLC

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Sir Ernest Harrison, whose Racal Electronics group has long been a favorite on the British stock exchange, has been biting his nails recently. While dp revenues of £309 million ($412 million) were up, profits were down sharply for the latter part of '84.

Six-month net income slid 3% while sales climbed 16%, and the company warned that profits for the rest of its fiscal year would be low. Investors promptly trimmed $342 million off Racal's market value on the London stock exchange—a 17% paper loss.

At the heart of Racal's disappointing stock performance was the American modem market. Racal-Vadic, the company's U.S. subsidiary that makes low-speed modems, has been hit by problems with product development and sluggish demand for its pc products.

In 1984, Racal-Vadic introduced an inexpensive personal computer modem. But the pc business stalled and Vadic was left with large stocks of its pc modem, which are now being sold at cost to try to clear the inventory. Development of a new range of modems has also cost Racal dearly. Problems with the manufacture of chips used in these modems delayed their debut for a year and resulted in layoffs of around 150 people at Vadic. These model troubles also stripped $35 million off the subsidiary's forecast sales.

New ventures have also been straining Racal's resources. Last year, the company set up Racal-Vodaphone to compete in the newly established British cellular radio market, where the firm is in head-to-head competition with British Telecom, the national PTT. The U.K. firm also leads one of the four main projects in the U.K.'s Alvey program on fifth generation research. As part of the project, the company is developing specialized data communications systems for cellular radio.

Communications is Racal's main business in both the military and civilian sectors. The company's other U.S. subsidiary, Racal-Milgo, manufactures data communications gear such as high-speed modems. Its Planet local area network is aimed at both office automation and defense applications. Racal believes the Planet LAN will help it break into the business market. The Miami-based Racal-Milgo had a good year, recording the best results ever. Its computer aided engineering sector also performed well, adding some $30 million to the company's revenues in 1984.

A hint of things to come for Racal comes from its partnership with Norsk Data. The companies are developing a 32-bit Lisp machine for expert systems work.

52
INTERGRAPH CORP.

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Huntsville, AL 35807-9985
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In the field of CAD/CAM systems and computer graphics, Intergraph is the darling of Wall Street, and for good reason. Although the company is 28% smaller (in revenues) than its major competitor, Computervision, its net profit margin of 52% is far better. In fact, its pretax margins, at almost 30%, are more than twice Computervision's 12.5%.

Throughout 1984, Intergraph consistently outpaced Wall Street expectations. Company revenues continued their surge, growing 60% to $403.8 million from $252 million in 1983. Intergraph's net profit was also outstanding, going up 114% to $62.9 million last year from $29.3 million in 1983. Computervision, meanwhile, showed only a modest profit increase and in early 1985 ran into severe financial troubles.

The Intergraph success story is based on several factors, one of which is the niche marketplace in which it competes. Its products are used in mechanical design and manufacturing; architecture, engineering, and construction applications; electronics design and manufacturing; cartography; land use and resource management: energy exploration; facilities management for public and private utilities; and technical publishing. All of these sectors have experienced significant demand for computing power.

Another success factor is that Intergraph, unlike its larger competition, concentrates on software. Computervision has traditionally developed its own hardware as well its CAD/CAM software. Since 1981, Intergraph products have used Digital Equipment Corp.'s VAX superminis, an arrangement that has benefited both companies: Intergraph is DEC's largest oem customer.

In 1984, Intergraph announced several new products that extend the firm's software to the desktop. The Interpro 32 is a 32-bit desktop workstation based on National Semiconductor's 32000 chip. The Unix and MS/DOS workstation is compatible with IBM PCs and Ethernet, and can concurrently emulate up to five DEC VT200, Tektronix 4014, or IBM 3270 terminals.

The Micro II, Intergraph's second major product announcement of 1984, is based on DEC's MicroVAX family of 32-bit processors. It is intended to distribute additional host cpu processing power to the office environment, opening up potential new markets for the firm. The system supports up to four workstations, including the Interpro 32. The Micro II and its workstations operate either as entry-level systems or as nodes on an Intergraph network. Already existing 68000-based Intergraph workstations will be able to connect to the Micro II via a specialized communications processor.

In conjunction with its new product announcements, Intergraph also introduced increased networking capabilities for its VAX-based systems. Its Ethernet implementation is now compatible with DECnet and will allow links to SNA.

53
TANDON CORP.

20320 Prairie St.
Chatsworth, CA 91311
(818) 993-6644

It's amazing the difference a year can make. An oem deal with IBM sent Tandon's revenues skyrocketing 94% to $346.9 million in 1983. Profits that year were up 43% to $27.2 million for the Cinderella company. While not exactly going rags-to-riches-to-rags, 1984 was a different story. Revenue increased only 14.8% over 1983 to $398.5 million. Profits nose-dived 83% to $4.7 million. The company also suffered its first-ever quarterly loss—$724,000 in the fourth quarter. It could just be the first in a series of disappointing quarters.

What happened? The company, which manufacturers floppy drives, Winchester disks, and cartridge tape products in the oem market, says the leveling in net sales resulted from a significant decrease in the growth rate of the microcomputer industry that is served by Tandon's disk drive products. The company also says that competition from the Japanese and others selling into its market has decreased the profitability of disk drive products. But the real competitive battle was over who would supply disk drives to IBM for its microcomputers, and in this bout, Tandon came out the loser.

Sirjang Lal Tandon, president and ceo, summed up 1984 for the company he founded as "a year in transition for the microcomputer industry and Tandon itself." Transition at Tandon took the form of management changes, movement of production offshore, and new product strategies.

Virtually the entire top management changed during the year. Four vice presidents resigned, four new executive officers from inside the company were elected, and some key management responsibilities were shifted.

To meet stiff price competition, particularly from the Japanese, Tandon has moved a large share of domestic production to its Singapore subsidiary. The company's California manufacturing operations were reorganized to produce products based on newer technologies, products less sensitive to price competition.

Tandon is planning a new generation of smaller, higher-capacity, lower-priced memory storage products for microcomputers. These will come to market in 1985 and '86. In particular, the company will address the Winchester hard disk market.

The company spent $16.3 million on R&D in 1984.

Sales in the United States contribute 68% of the company's revenues. Internationally, Europe contributes 4% and the Far East 27% to corporate revenues. Tandon says the company will be aggressively pursuing international sales, especially in Europe, with its newer Winchester products.

IBM's decision to drop Tandon's disk drive will hurt and hurt bad: the contract for floppy disk drives accounted for 58% of Tandon's sales last year. But Tandon management says that it has a letter of intent from IBM saying that Tandon will supply advanced floppy disk technology for such IBM products as the PC AT.

54
TEKTRONIX INC.

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Beaverton, OR 97077
(503) 627-7111

After three very flat years, Tektronix posted a hefty 10% increase in revenues to $1.42 billion in the 12-month period ended last November and a strong 45% rise in real income. Its net profits actually rose by 172% to $131.5 million, but this included a $33 million tax break the company had been accumulating for more than a decade on its Domestic International Sales Corp. Dp revenues, which had remained a flat $300 million for two years, rose an estimated 28% last year to $384 million, attributable chiefly to better-than-expected sales of its graphics color terminals, the models 4511SB and 4107 Unicorns.

It seems that everything fell into place at the same time. Three years of painful layoffs that shrank the company's payroll by 3,500 persons to its present figure of 20,600 ended in 1984. In addition, three years of decentralization during which the company established Strategic Program Units—small entrepreneurial groups formed to get technology to the market sooner than the typical two to five years—began to pay off. One of these units, a group using gallium arsenide instead of silicon, this spring became a wholly owned subsidiary called TriQuint Semiconductor Inc. And the adoption of Just in Time inventory techniques to streamline manufacturing has taken the cost of manufacturing down from 51.7% of sales in 1983 to 46.2% this spring. Just in Time techniques also helped reduce a high-volume crt line's cycle to three days from eight weeks just three years ago.

In January 1985, the company began to introduce additional models of its graphics terminals. These included the model 4125 that, with a faster processor and a lower price, will succeed the 4115B. It also introduced the 4128 and 4129, which are three-dimensional graphics devices. This spring Tektronix began shipping a family of microprocessor-based workstations—the series 6000. The workstations incorporate National Semiconductor's 16- and 32-bit chips—the 32032 and 32016. These products originate from Tektronix's Information Display operations, which account for nearly all of the firm's data processing revenues.

With its measuring instruments' sales remaining somewhat flat, the company in January paid $75 million to acquire CAE Systems, a tiny Sunnyvale, Calif., software company with $8 million in sales. CAE Systems designs ways to test, through computer aided design techniques, thousands of electronic circuit elements while they are still drawings on a graphics screen. Tektronix's in-house CAE development program hasn't paid off yet and the acquisition of CAE Systems will hasten its ability to offer these sophisticated CAE testing systems.

The company's breezy and sometimes humorous annual report observes that while the company's earnings had earlier refused to "kick loose" like a "stuck gauge needle," the company is now alive, well, and possessed of "the feisty vitality of early-day Tek."

55
DIEBOLD INC.

818 Mulberry Rd. S.E.
Canton, OH 44711
(216) 489-4000

Diebold holds a commanding 45% share of the 55,000 installed automatic teller machines (ATMs) that last year performed some 3.4 billion transactions. This was achieved despite intense competition from such giants as IBM and NCR.

Its 1984 earnings of $56.9 million on revenues of $474 million were an increase of 16% over 1983 but were also down from the previous year's rise of 18%. Dp revenues were $374.1 million in 1984. The company boosted R&D spending 43% to $12 million from $8.5 million the year before. Much of the research funds and an acquisition were aimed at allowing Diebold to say "thanks to the banks" and search out other markets, specifically the retail environment. It now is offering products to automate transactions at supermarkets, convenience stores, and gas stations. Last fall it bought Retail Terminal Systems Inc., a Hudson, Mass., manufacturer of electronic cash register and payment terminals that are aimed at the convenience stores and petroleum industries.

Now that most banks have ATMs, president and ceo Robert W. Mahoney sees the company's greatest growth to be in "added value services" to holders of the 100 million ATM debit cards in circulation. His predecessors brought the company out of safes and vaults and into ATMs; Mahoney, who joined the company three years ago after 21 years in sales and executive posts at NCR, is bringing Diebold into the retail environment.

Mahoney feels that once the preferences for different systems have been sorted out, the market for self-service money transaction systems (or electronic funds transfer systems, as they're often called) will grow substantially. "Today, there are approximately 245,000 convenience stores and gasoline stations . . . ideally suited for self-service EFT devices," Mahoney says. Last January, the company received a substantial order from National Transactions Systems to place a total of 1,000 Diebold cash-dispensing machines in 7-Eleven convenience stores and Safeway supermarkets on the West Coast.

In addition to its acquisition of Retail Terminal Systems, Diebold last year added three features to its automatic transaction systems and formed a third-party service business to provide maintenance of all EFT and computer industry electronic systems, such as teller terminals, modems, multiplexors, controllers, and mini and microcomputers.

56
MOHAWK DATA SCIENCES CORP.

7 Century Drive
Parsippany, NJ 07054
(201) 540-9080

"MDS has an auspicious future. We've made the decisions, consolidated and redirected our resources, and are now poised for growth and profitability through the '80s and beyond." So wrote MDS chairman and president Ralph H. O'Brien in the firm's annual report last July. His words have not exactly proved prophetic.

In fact, 1984 turned out to be a thoroughly rotten year for MDS. While most of the firm's trauma was precipitated in the second half by New York-based investor Asher B. Edelman, the initial trouble was self-inflicted, beginning late in 1983. The systems division's key new products for that year flopped, and in the quarter ending January 1984, earnings tumbled 84% over the prior year. The following quarter saw Mohawk's first loss, a $59.7 million decline that was more than 10 times larger than any quarterly gain in several years. For the full year ending Jan. 31, 1985, Mohawk lost $120.9 million, while revenues dipped 5% to $381.7 million. Gross margins on sales fell about 10 percentage points, while rental and service margins dropped about two points.

Neither of Mohawk's dp divisions fared well. The systems division spruced up its line with the Hero intelligent workstation, a version of Convergent Technology's N-Gen. Chip shortages and incompatibility with IBM systems crippled Hero before it could gain momentum, however, and the division has yet to recover.

The Qantel division, while continuing to introduce vertical market systems based on

its successful line of minis, spent much of its time in court. National Surety Corp. sued Qantel to recover a $5.5 million bond in connection with litigation filed by a former distributor, and a former sales rep filed a $15 million suit charging breach of contract, conspiracy, and fraud. Qantel reached out of court settlements in both cases. Early in 1985, Qantel president Dallas Talley organized a group of investors and put up $200 million to buy the division, but was rebuffed.

As if Mohawk's internal problems weren't enough, Edelman provided additional impetus. Fresh from dismantling Management Assistance Inc. and not yet ready to take on Datapoint, Edelman bought about 8% of Mohawk's stock and moved to gain operating control of the company. By October, O'Brien had stepped down and Edelman took over. Simultaneously, Mohawk was able to work out a new accord with its banks, a necessary step, since it had not satisfied certain net worth agreements stipulated in earlier covenants. The ironic postscript to Edelman's takeover came in March 1985, when Edelman himself stepped down as president and resigned his seat on the board because his role at Datapoint represented a conflict of interest. Turnaround specialist Matthew E. Tutino replaced him in both slots, and also was named to the new position of Qantel chairman.

57 CONVERGENT TECHNOLOGIES INC.

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Santa Clara, CA 95054
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T.S. Eliot wrote that April is the cruelest month. For Convergent Technologies Inc., all of 1984 might well have been April. The firm posted revenues of $361.7 million for the year, more than double the $163.2 million shown for 1983. While revenues doubled, earnings went through the floor. The problem was a fourth-quarter write-off of $14.5 million, which caused a yearly loss of $13.8 million versus the $14.9 million profit in 1983. A combination of hyperbolic management practices, dud product, and bad luck made for the gloomy weather that swirled around Convergent as the year ended.

A modest, mimeographed, seven-page handout told part of the story: a write-off of $3.4 million for pricing adjustments and hardware returns, with another $7.4 million charged off to inventory variance and excess. In plain English, Convergent was dumping its entire WorkSlate laptop micro line.

Another $3.9 million was shown to cover recruiting and the awarding of a bonus to new ceo Paul Ely Jr., whom one observer of Convergent likened to flotation gear for a sinking ship. Part of that sum, by the way, was also a separate bad debt provision. Yet another $2.4 million was attributed to items that included a canceled bond offering and loss on building disposal.

One headache with which Convergent at last came to grips was its MegaFrame, which functioned poorly in Unix-type multiprocessor configurations until the bugs were ironed out. Likewise, the company has taken a more realistic pricing attitude toward its N-Gen workstation. Here, the company had angered customers by setting one price and then being compelled to go back with new prices after discovering that it simply took more money to build the product than Convergent had first assumed.

As the year closed, speculation had it that Convergent's fortunes would improve when AT&T Information Systems released its Unix pc, which Convergent has been building as the 7300 voice/data workstation. Convergent is said to be building 50 of the machines each day under what could be a $200 million contract. Management estimates that Convergent will be doing $300 million annually in business with AT&T-IS by 1987.

Ely says that after he completes his program of corporate reorganization, Conver-

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58
MARTIN MARIETTA CORP.

6303 Ivy Lane
Greenbelt, MD 20770
(301) 982-6500

Martin Marietta means defense and aerospace business, but the brightest star in Martin Marietta's 1984 galaxy was neither of those stalwarts. It was Martin Marietta Data Systems (MMDS), the company's fastest growing business segment. Last year, Data Systems split in two, acquired a systems software provider, and achieved record sales, profits, and backlogs.

Data Systems has averaged a 25% growth rate over the past five years. Last year was even better. Total revenues jumped 134% to $361.5 million from $154 million. And the division entered 1985 with a $300 million backlog of orders.

The success was apparently too much for one entity to handle, so MMDS cut itself in half. The Information Technology division's job is to bring together software products and related services for commercial markets and facilitate internal application development. The Systems Integration division focuses on the multimillion-dollar business of integrating large-scale computer systems and the on-site management of computer operations, primarily in the federal marketplace.

That division hit a home run its first time at bat. Under a $185 million, 10-year contract, the company will provide the Navy with an automated worldwide personnel/payroll system.

The Information Systems division hit a grand slam early in 1984. It won a $684 million contract from the Department of Transportation to provide engineering and overall integration of the systems and technologies necessary for the Federal Aviation Administration's 10-year, $10 billion National Airspace System Plan.

Much of this year's success was based on the performance of Mathematica, which Martin Marietta acquired in 1983. The Princeton, N.J., company developed RAMIS II, one of the industry's leading fourth generation software systems. That product hit the $100 million mark in cumulative sales in 1984. RAMIS II even went international, offering RAMIS II Français as a natural language interface to RAMIS II and other databases.

While MMDS was the brightest spot in Martin Marietta's balance sheet, the company as a whole also had a presentable year. Sales increased slightly, up .05% to $3.92 billion from $3.89 billion, leading to an 35.7% increase in net income, to $191.8 million from $141.3 million.

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CIRCLE 59 ON READER CARD

59
THORN EMI PLC

Sunbury House
79 Staines Rd. W.
Sunbury-on-Thames
Middlesex TW16 7AH, England
(44-962) 5444

Better known for light bulbs, the Beatles, and British films, the Thorn EMI electrical appliances and leisure group has recently been making inroads into the dp domain. In less than three years the company has built up the $346.7 million (£260 million) Thorn EMI Information Technology division mostly through acquisitions. Thorn EMI Information Technology now accounts for about 10% of the group's total sales.

With the $11 million purchase of financial modeling specialist EPS Consultants earlier this year, Thorn EMI now claims to have the largest independent software house outside the U.S. Thorn EMI Computer Software has sales of over $50 million and plans to expand in the U.S. using EPS Consultants' distribution network. Also in the states, it has established TECS Inc. to sell software.

Overall, Thorn EMI's computer interests grew by over 25% in local currency during

1984, compared to the 29% growth rate of the previous year. In addition to its computer software division, Thorn EMI also owns Software Sciences and Datatech, which manufacture data recording and communication equipment. The company also has interests in the areas of computer maintenance, engineering, and telecommunications.

The proliferation of companies in Thorn's information technology division has resulted in yet another reorganization. This year the 14 operating companies that make up the division were grouped into five sections—systems, processing services, business systems, data equipment, and protection and control.

One of Thorn EMI's most surprising moves last year was the $133 million purchase of British chipmaker Inmos. Beating off a bid from AT&T, Thorn bought close to 76% of the company.

60
MANNESMANN KIENZLE GMBH

Postfach 1640
D-7730,VS-Villingen, West Germany
(49-7721) 861

The West German Mannesmann group was relieved to see a turnaround in its Kienzle electronics subsidiary last year. After reporting losses early in the decade, the company, now called Mannesmann Kienzle to reflect its integration into the group, just about broke even in 1983 and finally made a small profit in 1984.

Dp revenues reached $343 million (DM977.5 million), a 21% increase in terms of local currency. The company showed continued expansion of its business in West Germany and elsewhere in Europe.

The fastest growing part of the company is the Mannesmann Tally printer operation, which recorded a 35% boost in business last year. Indeed, this was the best year ever for printer sales, with orders reaching 167,000 units. This compares favorably with 1983's total of 92,000.

The data systems side of the firm, which accounts for the largest share of the revenues, grew by roughly 20%, thanks mainly to the company's new 9100 minicomputer. First shown at 1984's Hannover Fair, the mini contributed 75% of the division's annual revenues.

The 9100 also had a big impact on the company's export business. In 1983, 60% of Kienzle's sales were derived from West Germany. Last year the situation was completely reversed, with 60% of sales coming from outside Kienzle's home market. Those export revenues were strongest in France and Britain, where the company has been established for many years.

The 9100 mini system also did well in Austria, the Netherlands, Belgium, and Spain, where the market for dp wares, especially at the lower end of the product spectrum, is expanding rapidly.

Many of those 9100 system sales were in the financial sector, where Kienzle is making a name for itself with the banks and credit companies. The mini also scored points with medium-sized companies and smaller firms with ambitions for the future.

To expand that customer base even further, Kienzle must come up with a bigger product portfolio. This year the company plans to pump $10 million into research and development of hardware. Another $20 million will go for such things as development of new software products, the training of personnel, and the hiring of 150 more salespeople. Kienzle also plans to put $10 million into new manufacturing facilities and offices.

61
COMPAQ COMPUTER CORP.

20555 FM 149
Houston, TX 77070
(713) 370-0670

Few fairy tales begin in Houston, but the storybook rise and continued success of an IBM PC clone company continues to astonish. After ringing the cash register bell to

Clearing Winter Storm, Yosemite National Park, California 1944. Photography by Ansel Adams. Courtesy of the Ansel Adams Publishing Rights Trust. All rights reserved.

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CIRCLE 78 ON READER CARD

the tune of $111 million in 1983 revenues, Compaq's fortunes soared again in 1984. Sales of $329 million moved Compaq to the forefront of the personal computer industry, only steps behind market leader IBM.

Compaq began as an idea conceived over a cup of coffee at a local Houston restaurant, and in 1983 three Texas Instruments employees delivered the world's first portable computer that was as IBM PC-compatibile as the lawyers would allow. Its success that year was due in part to the inability of IBM to meet delivery schedules and Compaq's efforts to recruit and cultivate a devoted dealer network. The company's 25 pounds-plus luggable computers gave new meaning to the phrase pumping iron.

Success in 1984 had a similar origin—when IBM couldn't meet demand for its high-performance PC AT model, Compaq's recently introduced tabletop version, the DeskPro, picked up the slack. Indeed, marketing surveys indicated that last year Compaq sold more DeskPros than IBM sold PC ATs. The company is estimated to have shipped about 139,000 portables and desktop models last year, about a tenth of IBM's production.

Compaq grew to corporate adolescence by proving it was more than a one-product company. Following up its DeskPro success, Compaq introduced an integrated voice and data personal computer in early 1985 into an increasingly crowded and uncertain market. R&D spending soared to $11 million, as the company moved to expand its product line.

The Houston fairy tale does have a happy ending, as earnings practically tripled during 1984 to $12.9 million. If there is a witch on the scene its the Wicked Witch of the East (in Armonk) with its price umbrella. Compaq's profit margins are razor thin, and getting thinner, due partly to the curse of IBM's aggressive pricing strategy. But if the other dwarfs of the IBM PC-compatible business fall into the abyss, Compaq may be able to raise prices and take out a long-term lease on the yellow brick road.

62
SEAGATE TECHNOLOGY

920 Disc Drive
Scotts Valley, CA 95066
(408) 438-6550

Seagate was flying high until midyear, when revenues plummeted 50%—a consequence of IBM's decision to cut orders for the Winchester disk drives that go into its microcomputers. But despite Seagate's troubles, it was the only supplier of Winchester drives to IBM that remained profitable.

Seagate's net sales for the first half of calendar 1984 were nearly $201.6 million; sales for the final half were $102.4 million. Nonetheless, Seagate ended calendar 1984 with revenues of $304 million, compared

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(301) 231-9650

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(313) 649-5210

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Associated Telephone Industries Inc.
(604) 271-3988

with last year's $222 million. Income for the first half was $23 million; for the second half it was only $807,000, bringing income for the calendar year to $23.8 million, 19.6% less than last year's $29.6 million.

Seagate, which developed and shipped the first 5¼-inch Winchester disk drive in 1980, has become the leading independent manufacturer of these drives. The company built its business on customers like IBM, which uses Seagate drives in its PC XT.

Personal computer manufacturers, confronted with low demand for their products and excess inventory, cut back on disk drive orders in 1984. When IBM failed to order Seagate drives, Seagate lost its biggest customer. IBM's policy of never paying more than it has to, as well as competition among disk drive manufacturers, contributed to plunging prices for Winchester disks—a 10 million-character disk that went for $450 in early 1984 cost only $300 in 1985. To cut costs Seagate laid off 800 employees and shut down a domestic plant, sending the bulk of its manufacturing offshore to Singapore.

The light at the end of the tunnel was the hope that IBM would turn to Seagate as a supplier of disk drives for its PC AT, and Seagate finally reached the light when IBM placed a $200 million order in March 1985.

Seagate has signed an agreement to acquire Grenex Inc., a producer of thin-film media. This thin-film, or sputtered, medium is a disk coating that provides greater storage density. Grenex's media are still in the R&D stage, so production will not ramp up for another year or so.

New products introduced during the year included a 3½-inch 10MB drive, a 5½-inch half-height 20MB drive, and a full-height 40MB drive.

63
BASF

Gottlieb-Daimler Strasse 10
6800 Mannheim 1, West Germany
(49-621) 4008

Fifty-one years ago, German chemicals giant BASF invented a form of storage that has been the mainstay of the dp industry—magnetic tape. In fact, the company is still among the leaders in the magnetic media field. These media products coupled with European revenues from Hitachi mainframes resulted in dp revenues of $298.2 million (DM850 million), a 21% increase in local currency.

While some parts of the pcm business may be on the rocks in the U.S., IBM-compatible mainframe supplier BASF in Europe had smoother sailing last year. BASF got $134 million of its $298.2 million dp revenue from sales of Hitachi mainframes and peripherals. Most of those sales came from Germany, the U.K., and France. Claiming to be the number one pcmer in Europe, BASF had more than 300 mainframes and over 20,000 peripherals installed at the end of last year.

BASF also considers itself to be the fastest growing European pcm, since it's installed more plug-compatible systems than anyone else. It has, after all, been a European pcm supplier longer than Amdahl or National Advanced Systems, and Olivetti sells only Hitachi mainframes in its home market of Italy. The growth in BASF's dp trade meant the company had to hire 200 more employees on the data side last year. Sales of its new 6480 disk system, which is equivalent to the IBM 3380, were particularly strong. BASF was the first European pcm to hit the market with a 3380-type system. By the end of last year it was installing 400 gigabytes of capacity a month.

Last year the company introduced support for XA on its 7/75 and 7/88 models, which are based on the Hitachi M260 and M280 machines, respectively. It also upgraded the power on its IBM 4381 level 7/69 machine, which is based on the Hitachi M240H. BASF's answer to the IBM Sierra announcement was also unveiled earlier this year.

On the media side, which accounts for 55% of the company's business, BASF marked its half a century in the magnetic tape realm by putting its current R&D activities on the line. After entering the thin-film disk market, it is now working on new density techniques for floppy disks that would greatly increase capacities. It's also working on high-density chromium dioxide cartridge tapes and magneto-optic technology that BASF believes will be the optical storage technique for the next 10 years.

BASF's current line of media products fared well in 1984, especially in the floppy disk market, where the pc boom significantly spurred sales of the company's FlexyDisk. Around $40 million of the company's media revenues came from its U.S. arm, BASF Systems Corp., in Bedford, Mass.

64
PLESSEY CO. PLC

Vicarage Lane, Ilford
Essex 1G1 4AQ, England
(44-1) 478-3040

Like many established British dp firms, Plessy is finding the '80s tough going. A heavy investment program and poor overseas performance contributed to lower profits for the U.K. telecom company. The System X digital telephone exchange, which was developed in partnership with Standard Tels., Ionics & Cables and GEC, also clouded the profit picture.

The dp sales scene was much brighter. At the end of last year Plessey's dp revenues hit $290 million (£217.5 million) an increase of 14.8% in local currency. On the dp front, Plessey launched a 256K business computer at the beginning of last year. This system ties in with the company's Integrated Business Information System (IBIS), which includes the IDX digital PBX and various workstations.

Things were bleaker from a peripheral point of view. The British company's peripherals division has not turned a profit for the past three years.

The sharpest thorn in Plessey's side comes from the telecom business, where profits are down over 10%. The chief culprit is the System X digital exchange that was commissioned by British Telecom. The switch, which cost Plessey $100 million to develop, has still not generated much revenue. Production delays on the switch resulted in a $6 million loss.

What's worse is that although System X scores high marks in the competitive world of digital exchanges, Plessey still has little prospect of sales outside the U.K. In a bid to broaden its appeal, Plessey is working with its U.S. subsidiary Stromberg Carlson to produce a U.S. version.

Stomberg Carlson itself is proving troublesome. Despite Plessey's pouring $30 million into the firm last year, with an additional $36 million in the current year, Stromberg remains a drain on Plessey. The British parent is hoping to revitalize Stromberg by bolstering its product line with some of Plessey's U.K. wares.

65
RICOH CO. LTD.

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Minato-ku, Tokyo 107, Japan
(81-3) 479-3015

Using steady domestic and overseas sales of standalone facsimile and copier equipment as its mainstay, Ricoh continues to diversify into office automation products. DATAMATION estimates Ricoh's sales of data processing equipment increased about 30% in 1984 to $290.1 million (¥68.9 billion) and accounted for almost half of overall sales growth. The Japanese domestic market absorbed most of Ricoh's Japanese language word processors, and office computers. Overseas oem arrangements increased demand for Ricoh's printers, teletex equipment, and pc components.

Ricoh came out of nowhere in 1984 to take the number three position in the Japanese word processor market. The Ricoh sales network in Japan is the envy of Japanese dp giants. While Hitachi Ltd. designed and produced Ricoh's Japanese language word processing system, Ricoh markets and distributes it because its 4,000 retail outlets in Japan are backed up by a network of 40 wholesalers and distributors.

An oem agreement to supply high-speed facsimile equipment strengthened Ricoh's relationship with AT&T Information Systems in 1984. Ricoh also oems pc boards to Convergent Technologies. Steady moves into the pc oem market during 1984 are part of Ricoh's plans to become a supplier of pc/integrated workstations. As the re-

sult of negotiations during 1984, it looks as if Ricoh is hoping to market AT&T Information Systems' office automation equipment in Japan. Ricoh is reportedly seeking out foreign partners to provide products and software solutions for the intensely competitive domestic market for office systems.

During 1984, Ricoh consolidated its American marketing network by merging Ricoh of America and Rapicom Inc. to form Ricoh Corp. This move further strengthened Ricoh's stateside distribution and service network and put the firm more in tune with the product needs of its biggest overseas market. Tie-ups with American and possibly European allies are likely to continue through reciprocal oem arrangements that show Ricoh how to better blend its products into integrated office automation systems also required in a maturing Japanese market.

66
PARADYNE CORP.

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Largo, FL 33540
(813) 530-2000

While waiting for decisions on the Securities and Exchange Commission and related lawsuits, Paradyne in 1984 decided to go to work and make some money. Revenues zoomed 39% over the previous year, to $289.9 million, and net earnings tripled 1983 levels, reaching $11 million. While those profits are no better than what the company posted in 1980, they still represent a promising turnaround from its dismal performance in 1983.

Paradyne's two-year battle with the SEC over allegations that the company used fraudulent practices in obtaining a $100 million contract with the Social Security Administration will finally be decided in federal court this month. Management, which has always contended the charges were unfair, has learned to cope with the distractions of litigation and the pain of a $1.2 million bill for legal fees, and has turned its attention to business.

"The company has been engaged in expanding and strengthening its marketing and service organization," says Robert S. Wiggins, Paradyne's chairman, president, and ceo. He cites that emphasis and the success of the MPX modems and DCX multiplexors as the bases for the strong revenues.

Among the new products introduced during the year were the very high speed VHS modem, which combines with the company's MPX series to form a full line of advanced signal processing modems; the 9403 protocol convertor; and an enhancement of the PIX/PIXNET product line. Investment in research and development was increased. And though its one-year backlog of unfilled orders was down, the company attributed this to "the significant increase in products shipped during the year as well as the compressed order/delivery cycle."

Despite unimpressive income figures from overseas subsidiaries, and a recommendation from a congressional committee that Paradyne be provisionally barred from future government contracts, analysts are bullish. They point to strong company management and a weak government case as cause for optimism. Indeed, color has returned to the cheeks of Paradyne stock, with earnings per share rising to 49 cents in 1984 from 16 cents the year before. To start 1985 off right, the company announced a three-year oem agreement with BellSouth Advanced Systems Inc., a subsidiary of South Central Bell, to distribute Paradyne modems and multiplexors in the Southeast.

67
3M

3M Center
St. Paul, MN 55144
(612) 733-1110

In 1984, 3M oversaw a far-flung conglomeration of more than 100 generally autonomous operations, grouped into 39 divisions, and sold a staggering 50,000 different kinds of products.

Revenues rose 9.4% to $7.71 billion in 1984 and profits pushed up 10% to $733 million. DATAMATION estimates 3M's dp revenues grew about 8% to $281.4 million—a tiny speck in this vast organization that some old-timers at the St. Paul world headquarters still refer to as "the mining company." Nonetheless, dp activity was not without exciting breakthroughs, and some parallel disappointments.

In the computer memory media business, which accounts for most of 3M's dp revenues, the company began to ship test models of its erasable laser-based optical disks. It also intensified research into what it calls "stretched disks," and in early 1985, began producing samples of the devices for testing by computer manufacturers. The new disk consists of a flexible magnetic material that is stretched and bonded to a rigid substrate made of polyethermide. The result is a hybrid of a floppy and a Winchester rigid disk and is expected to threaten Winchester media.

A disappointment to 3M was its new electronic document transmission system, the Whisper Exchange. After only a year on the market, it was dropped for lack of customer interest. Also, the computer output microfilm (COM) operation, where 3M has held a dominant position for more than a decade, was declared a "marginal product line," and was sold off to Bell & Howell. 3M took a one-time $12 million write-off on this divestiture.

The company, however, continued its steady sell of products in the micrographic area with its Microprint II system for filing and retrieving microfilm documents. Recently introduced software for document storage and retrieval operates on an IBM 4300 computer, under two operating systems.

Last year, 3M spent $43 million for research and development, a 15% increase over 1983. One of its better known research projects was a series of experiments in earth orbit aboard the Discovery space shuttle to grow crystals in near-zero gravity. It plans further experiments this year and well into the 1990s. It has also started development on a research center in Austin, Texas, that in five years aims to employ thousands on a 150-acre complex.

If the company has a problem, it is the stiffening price competition for videocassettes and computer floppy disks. In response to these pressures, 3M's Memory Technology Group fought back last year: it matched prices with Verbatim, a unit of rival Eastman Kodak and a leader in the memory market.

Another change came inside the Information Systems Group, which sells microfilm retrieval products, and copier and facsimile equipment. Last year 3M stepped up its efforts to diversify distribution channels for these products. More than 80% of the copiers and fax machines are now being sold through business equipment dealers, compared with 20% two years ago.

68
MITEL CORP.

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Kanata, Ont. K2K 1X3, Canada
(613) 592-2122

So far, Mitel has been unable to recapture the ground it began to lose back in 1982. Then it was king of the small PBX realm. The company had actually doubled its sales every year since 1977 and earnings had tripled from 1976 to 1981. During 1984, Mitel's revenues grew by 15% to $277.4 million ($C365 million). Earnings haven't been announced, but were expected to be better than the loss of $32 million chalked up in 1983.

Aiming at the highest end of the PBX market, Mitel plowed much of its cash into developing the mighty SX-2000. The switch, however, has yet to benefit the firm's bottom line.

Originally scheduled for delivery in mid-82, the switch was stalled due to production problems and software snags. The delays also cost Mitel valuable contracts with big corporate customers and the Bell operating companies. The SX-2000 struggle also reportedly scuttled the company's 1983 deal with IBM.

The U.K. became the first country to receive the SX-2000. Mitel is focusing its marketing efforts on Britain, which accounted for half the firm's SX-2000 orders in '84. The Canadian company has important U.K. distribution deals with British Telecom and ICL. Mitel's PBX pact with ICL, however, may be tenuous following the Standard Telephones & Cables' buy into the U.K. mainframer last year.

Back in the U.S., where customers first got their SX-2000 switches in July, business was slower. There is no doubt that the delivery delays and IBM defection to Rolm have tarnished Mitel's image in the States, paticularly on Wall Street. Mitel's piece of the PBX pie has steadily been shrinking. The company, which had an 11.6% share of the U.S. switching market in '83, is expected to have only a 10% stake by 1988.

The 12-year-old company has also been bedeviled by management problems. Last year almost a dozen executives, including chief operating officer and executive vp Donald Gibbs, fled the firm. Turnaround specialist George H. Gilmore was brought in to head operating planning and to implement cost-cutting measures, among them laying off workers and closing plants.

69
FERRANTI PLC

Bridge House, Park Road, Gatley
Cheadle, Cheshire, England
(44-61)428-3644

Ferranti has been a family affair ever since founder Sebastian de Ferranti set up the original company in 1882 and opened up the world's first power station in London. One of Britain's foremost defense contractors, the firm is now branching out into new markets and new lands.

Last year Ferranti bought Houston-based TRW Controls Corp. for $19 million, rechristened it Ferranti International Controls, and has plans to repeat the exercise with other acquisitions. The TRW takeover is important for Ferranti because it moves the British defense contractor further into the commercial dp domain. Instead of offices and factories, Ferranti's own Argus systems, manufactured by Ferranti Computer Systems, are more likely to be found on board warships and in weapons systems.

On the whole, 1984 was a good year for Ferranti. The group reported good profits while the dp business grew to $266 million (£199.5 million), a rise of 36.2% in pounds sterling.

Ferranti Computer Systems has reshaped its executive team to give more edge to its commercial business. Managing director Peter Dorey has hinted that he wants to move away from defense business probably by buying a U.K. company with the right commercial know-how. At present Computer Systems sells word processors, pcs, process control systems, and a handheld market research terminal.

Last year the company brought its office automation systems to market at the office automation show in London. The Argus range of office products includes an intelligent terminal cluster controller called the Interactive Terminal Manager (ITM). This links to IBM and ICL mainframes to offer personal computing, and the multiwindowing vdu gives concurrent access to a number of separate mainframes or minis. Ferranti also began selling two message switching systems and a word processing package based on a U.S. system from Syntrex.

Meanwhile, in the U.S. Ferranti formed a close development link with expert systems firm Inference Corp., and is now its sole European distributor of the Inference Lisp-based Automated Reasoning Tool.

The British company also decided to take its CAD/CAM expertise across the ocean and set up an office of Ferranti Infographics in Huntington Beach, Calif. Earlier in the year the company had won one of Europe's biggest ever CAD/CAM orders from British Royal Ordnance Factories.

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Technical Publishing

70
SANDERS ASSOCIATES INC.

Daniel Webster Highway S.
Nashua, NH 03061
(603) 885-4321

At first glance, everything at Sanders looks dandy. Total corporate revenues of $837.7 million for 1984 reflect a 29% increase over '83 revenues of $648.8 million. Dp revenues were up almost 25% to $260.8 million.

All that sounds fine. But net corporate income for Sanders was down 7% in 1984 to $39.7 million. Officials blame high initial manufacturing costs and delays in some major programs. Sanders also had to contend with unexpectedly high nonrecurring costs on a number of smaller programs.

But there was good news, too. Sanders' government business, amounting to about 60% of its total revenues, was healthy: funding continued on major programs, and, overall, government systems and products sales volume, profit, and order backlog continued to increase.

Another bright spot was CalComp, Sanders' computer graphics company. Revenue and profit increased, led by strong acceptance of the graphics display product line by oemers. The plotter, digitizer, and CAD systems product lines also showed revenue and earnings improvements. Sanders and CalComp are pinning a lot on two newly introduced plotters, particularly the comparatively low-priced Model 1040.

In the turnkey CAD market last year, sales doubled for CalComp's architectural, engineering, and construction segment. The year 1984 also saw the introduction of the Unix-based CalComp System 25. The new line offers standalone workstations, networking for distributed applications, and configurations that directly interface with larger host computers such as VAX.

Sanders officials say they are optimistic that the second half of 1985 will be an improvement over 1984 and the first half of 1985. They say the rest of the year will bring "favorable earnings momentum" and continued revenue growth.

71
BOEING COMPANY

P.O. Box 3707
Seattle, WA 78124
(206) 655-1131

The economic recovery of 1984 and the current administration's penchant for buying aircraft and weaponry buoyed Boeing's sales in 1984. The company's 10% increase in profit over 1983—to $390 million—was also boosted by a DISC windfall, which pushed its net up an astonishing 121% to $787 million. Meanwhile, Boeing posted a 7% decline in revenue to $10.35 billion, which was largely caused by reduced sales to the government. The problems that also dog some commercial airlines plus the strength of the dollar abroad depressed Boeing's sales in commercial and foreign sectors.

DATAMATION estimates that Boeing Computer Services (BCS) took in about $260 million in outside revenue, a 4% increase over last year. Boeing is no stranger to the perils of providing timesharing services in an age of cheap micros, but the firm has been insulated a bit from the traumas felt by other timesharing vendors because its services are scientific in nature, not commercial. Since supercomputer prices have not yet fallen to the point at which many companies can buy their own, BCS's timesharing supercomputers are still in demand.

The organization continued its shift away from its traditional computer services and toward networking, computer aided design and munufacturing (CAD/CAM), microcomputers and workstations, and training. In January, BCS introduced its first commercial network services. It also won a five-year, $200 million telecommunications contract from NASA, and a $19 million contract for a communications network from the Commonwealth of Pennsylvania.

With the far-off world of factory automation suddenly close at hand following General Motors' promotion of the Manufacturing Automation Protocol, Boeing saw a potentially lucrative market for which it is ideally situated, as the primary dp arm of a highly automated corporation. At the National Computer Conference, BCS joined with GM and a host of other vendors to demonstrate a multivendor network using Open Systems Interconnect (OSI) technology.

BCS has continued to develop new technologies internally. The organization estab-

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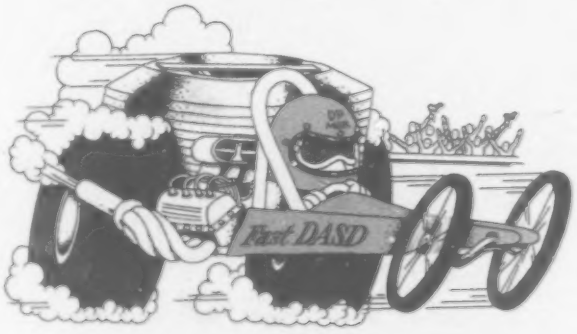

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DAAD

CIRCLE 67 ON READER CARD

lished its own artificial intelligence center and is also working with Carnegie Group Inc. of Pittsburgh on research into AI, expert systems, voice recognition, machine vision, and robotics. Through these technology areas, as well as through MAP and the diversified products it introduced last year, Boeing believes it can transform itself from a processing services vendor into a more competitive force in more sectors of the market.

72
SHARED MEDICAL SYSTEMS CORP.

51 Valley Stream Pkwy.
Malvern, PA 19355
(215) 296-6300

SMS continued to increase revenues and earnings despite mixed financial signals from the health care industry in 1984. The company has the biggest piece of the market for hospital information systems in the U.S. and is also doing business in the U.K., Ireland, the Netherlands, Spain, West Germany, Canada, Japan, and Puerto Rico.

Hospitals are faced with federal regulations on medicare reimbursement rates, and with competition from health maintenance organizations (HMOs), freestanding emergency rooms, and one-day surgery centers. In response, hospitals' demands for information systems are rising, as are SMS's revenues. Climbing 22% from 1983 figures, SMS's revenues increased to $256.8 million, while net income jumped 24% to $33.8 million. Analysts have predicted this success will continue: Kidder Peabody recently estimated the company will grow more than 20% annually for the next five years.

During 1984, SMS saw an increasing interest in all application areas including financial, patient care, and database management systems. An important addition to SMS's clinical system offerings is the Tumor Registry, an application that automates the registration and monitoring of cancer patients. The year 1984 also saw SMS expand the role that pcs play in the hospital information network. Nurse Staffing and Medicare Cost Reporting are two examples of new pc applications developed by SMS.

73
M/A-COM INC.

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M/A-COM Inc. bounced back in 1984 from a period of turmoil. In 1983 the widely diversified communications company had looked as though it might be suffocated by excessive growth, all of it from acquisitions.

Leaner and meaner after shedding two businesses and consolidating 21 operating companies into eight in 1983, the minicomglomerate began to make money again. It posted a 21.8% increase in 1984 revenues, a 31.7% climb in profits, and its stock, which had languished at around 14 or 15, was being traded for $25 a share early this year.

Growth in 1984 consisted only of new business orders—no acquisitions, no divestitures, no reorganization. The growth contrasts sharply with the year earlier when revenues were flat, rising only 7% from the year before, and when profits actually dropped and dp revenue was unchanged.

This year, M/A-COM's integrated digital businesses—which account for all of its dp revenues—posted a 25% gain, taking in $250 million, compared with $200 million in 1983. That operation is about even with two other top revenue producing operations—microwave components and cable and home television—but it is growing the fastest: 30% to 40% a year, and the company claims it will continue that way through 1990.

Judging from some of its current big orders, the claim may be justified. It has a $20 million contract to provide earth stations and signal-processing capabilities for Schlumberger's oil exploration satellite network; a $20 million to $30 million order from GTE for similar products for GTE's Spacenet network; a $20 million order to provide systems for the Argo private satellite network; a $16 million order to hook up 300 Southland (7-Eleven) Corp. branches in a satellite network; and a $6 million contract to connect 750 stores in the Wal-Mart retail chain. These orders were part of an estimated $280 million worth of contracts the operation received in 1984 for satellite communications systems.

The company was known as Microwave Associates until the late 1970s when it began an acquisition campaign that, in the five years from 1979 to 1984, tripled its revenues to $768 million from $227 million.

74
PERKIN-ELMER CORP.

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The Data Systems Group, Perkin-Elmer's only dp division, recorded strong sales and order growth throughout 1984, and in early 1985 introduced several new products designed to take the firm through the next several years. The group's revenues, all from the 3200 supermini line and related products, grew 11.1% during the year to $250 million. (By comparison, corporate revenues grew 12.4% to $1.26 billion while net income was up an impressive 27.4% to $66 million.)

Moreover, orders for the Data Systems Group have been growing at better than a 20% clip, and reached record levels by year-end. Concurrently, the firm has cut costs and streamlined the group's operations, helping to restore pretax margins. Still, the current margins of about 7% are well below the division's 1980 record of over 11%.

The Data Systems Group is the heir of Interdata, which a decade ago introduced the first 32-bit supermini. Since being acquired and renamed, the group has confined itself to the supermini market. Indeed, in the past few years, the division has concentrated even more narrowly, appealing primarily to the scientific and engineering users already familiar with the P-E name from the firm's analytic instrument, semiconductor, and optical products groups. The division also makes storage and communications peripherals for the 32-bit engines.

By focusing on the scientific and engineering users, with their needs for very powerful processing engines, the company has built a reputation as one of the supermini market's speed kings, competing with Gould and Harris to sell the fastest superminis. In early 1985, P-E topped off its 3200 line with the 3260MPS, a multiprocessor system capable of 5.5MIPS in a tightly coupled seven-processor configuration. The new product can communicate with other 3200 series boxes via the proprietary PENnet. Perkin-Elmer also introduced the low-end 3203 system and advanced features for its Reliance Plus DBMS. The new Reliance Star product enables remote 3200 systems to share the same database, in effect becoming a single, distributed database machine.

Despite the new products, analysts and customers are worried that Perkin-Elmer may abandon the high end of the supermini market. They note that P-E is still the only vendor exclusively using TTL technology, and that the uniprocessor performance of the 3260 engine is significantly slower than boxes supplied by Gould, Harris, and even commercially oriented vendors like DEC

75
ZENITH ELECTRONICS CORP.

1000 Milwaukee Ave.
Glenview, IL 60025
(312) 391-7000

Data processing revenues are only about a tenth of Zenith Electronics Corp.'s consumer business revenues, but they represent a growing proportion and an area of strategic importance to the company.

Zenith's dp activity is organized under the Computer Systems and Components division of the firm. One group within that division, Zenith Data Systems, has been directing its business microcomputers at selected markets served by 1,000 dealers, 80 distributors, and the company's own sales force. The micros run under such popular operating systems as CP/M and MS/DOS. The Computer Systems and Components division also is a leading oem vendor of vid-

eo monitors for personal computers, terminals, printers, peripherals, software, and smaller components.

DATAMATION estimates that microcomputer systems accounted for $249 million of Zenith's $1.72 billion in 1984 revenues. Despite a painful shakeout in the pc market, the company expects to maintain its pace of shipments this year. Last year it sold 105,000 personal computers.

Its newest line is the Z-150 family, which includes the Z-150, a 16-bit desktop personal computer, and the Z-160, a portable version. Operating under Z-DOS (Zenith's version of MS/DOS), the models can run nearly all of the applications written for IBM's ubiquitous PC line. Operating in IBM's field means being sensitive to the giant's marketing moves. Thus, Zenith has been forced recently to slash prices on its pcs, cutting the hard disk Z-150 models by $600 and the floppy disk models by $100. Further price cuts are likely, the company hints.

Instead of spending huge advertising dollars in the retail computer market, the company has concentrated on oems and on markets in the military and education fields. For instance, its Z-100 line is sold on private labels by five companies, including Control Data (before it departed the retail trade) and United Press International, which incorporates a Zenith microcomputer in a turnkey system that it sells to small radio stations. Some 900 of the company's dealers add value to Zenith micros before selling them. With its computers installed in 275 universities and colleges in the U.S., Zenith is also the third largest supplier to the education market behind IBM and Apple, according to independent market analysts.

76
CONTINENTAL TELECOM INC.

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Atlanta, GA 30346
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"You acquire companies to telescope time," says Charles Wohlstetter, founder and chairman of Continental Telecom Co. Formed 24 years ago, the company grew into the nation's third-largest independent telephone system largely through the acquisition of some 40 small telephone companies. It is following the same strategy in the high-technology, nonregulated business arena, having spent $350 million in the past six years on acquisitions.

In 1984, the company picked up—for $35 million—Northern Data Systems Inc., a provider of turnkey systems whose software will be used with hardware made by Contel CADO Systems, which Contel bought two years ago.

This spring it was dickering to acquire CADO's distributor network consisting of independent operations with representation in some 200 cities, and also was considering closer ties with Qantel, a Mohawk Data Sciences subsidiary that sells the CADO line of microcomputers, adding its own vertical applications software. It wound up buying MDS's service and credit divisions for $152.5 million.

Last year, as Contel's properties became more diversified, it split itself into four operating groups: telephone operations, business products, networks, and diversified operations. The last three operations provided the data processing revenues of $242.4 million.

That figure is somewhat modest, compared with what the company seems to be expecting in 1985 as it continues to selectively acquire companies that enhance its existing properties. For example, Contel CADO last year reported a 2% drop in sales over 1983, owing to the computer shakeout. Two other operations, STSC, a timesharing operation that lost $1.4 million, and Executone, a manufacturer of business telephones for small business that had a two-thirds decline in income, were expected to perform better in 1985.

In a surprising move early this year, Contel president and ceo James V. Napier resigned to become head of HBO & Co., an Atlanta hospital computer systems supply company. His successor is John N. Lemasters, the former head of American Satellite Co., a provider of telecom networks that is jointly owned by Contel and Fairchild Industries. Unlike Napier, whose background was in finance, Lemasters has an engineering degree from Georgia Institute of Technology and spent 25 years with Harris Corp. before joining American Satellite.

77
CRAY RESEARCH INC.

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Minneapolis, MN 55402
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Cray Research continued its pattern of strong growth in 1984. Revenues were up 34.8% to $228.8 million and earnings grew 74% to $45.4 million, including a tax gain of $6 million courtesy of the tax reform act of 1984.

The firm, which claims 60% of today's supercomputer business, installed 23 new systems during 1984: two were installed internally for software development and marketing support, 13 were commercial accounts, and eight went to research establishments and universities.

Of the 21 newly installed systems, 16 were Cray X-MPs. The company sold five Cray 1/Ms, but clearly the X-MP is the company's premier product. These machines sell for an average price of $10 million. The company has a total of 88 systems in operation worldwide.

Success seems likely to continue. John A. Rollwagen, chairman of the company, said early this year that, "Demand for Cray sys-

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tems remains extremely strong." In January, for example, Rollwagen noted that "Over half of our anticipated 1985 installations are already under contract."

Last spring, Cray announced the first order of a Cray-2 by the National Aeronautics and Space Administation (NASA). According to the company, the new supercomputer is a four-processor, 256 million word system with cpu performance approximately six to 12 times that of a Cray-1. The machine will run the Unix System V operating system.

Cray boosted research expenditures 47% to $37.5 million. The market for supercomputers is apt to change this year, with several new companies developing smaller, less expensive machines that offer near-supercomputer power. So far, Cray has endorsed the new products, licensing its instruction set, operating system, and FORTRAN compiler technology to at least one company to date. Cray's strategy is apparently to support the "baby Crays" and cash in on the upgrade business that it hopes will follow.

78
GENERAL INSTRUMENT CORP.

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Frank G. Hickey's forecast of General Instrument's fiscal year 1984 was no outside shot. Chairman and chief executive of GI, Hickey hit it right on the nose when he said that "fiscal 1984 was going to be difficult, a year of transition." Net corporate income dropped 37% to $32.7 million in 1984 from 1983's $51.9 million, while corporate revenues of $1 billion were up 14% from 1983. Dp revenues managed to edge up an estimated 7% to $225 million.

Good news is that Sytek Inc. (51% of it owned by GI) continues to increase its revenues in system design and equipment sales for local area network applications.

GI's chip business is still suffering. In 1983, as reported in DATAMATION, "video games turned into horror shows and small home computers stopped going home with consumers." GI still has not recovered from these shifts, and 1984 delays in new manufacturing processes only salted already smarting wounds. The industrywide slowdown in the cable television industry produced more static than profits in the Broadband Communications Group.

Also, GI's loss of major contracts in the state lottery business—Ohio and New Jersey—means $20 million less in gross revenues.

What's needed, say analysts, is new markets. As the Value Line stock evaluating service put it recently, "Small success stories in defense electronics and—potentially—local area networks won't offset the weakness in major businesses."

79
GOULD INC.

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Rolling Meadows, IL 60008
(312) 640-4000

In April 1984, Gould finally made good on its promise to become an "all electronics" company. The sale of its remaining non-electronics businesses completed a four-year metamorphosis but, as in 1983, the scars of transition were etched clearly on last year's performance reports. Corporate revenues inched upward 5% to $1.39 billion. DATAMATION estimates that the dp portion of this was $224.5 million, up from $189 million in 1983.

Gould's dp operations are now in its Electronic Systems Group. ESG's two divisions—one responsible for 32-bit superminis, the other for industrial automation systems—both secured deals with China. Eleven universities in the People's Republic purchased $5.8 million of Concept 32/27 superminis for software development and research. And in industrial automation, Gould signed a deal with a Chinese import/export corporation, which called for the manufacture and assembly of programmable controllers in a Tianjin factory.

Highlights from a busy year of product introductions include new line-toppers for its Concept 32 real-time and Unix-based PowerSeries superminis, delivering some 10MIPS each. Gould also entered the burgeoning CAD workstation market with its Power-Station 5100.

Perhaps the real story at Gould in 1984 didn't concern products but people: new faces as well as new products were evidence of the company's transformation. The biggest change was the election of James F. McDonald, a 21-year IBM veteran, to president and ceo. Most recently, the 44-year-old McDonald was general manager of IBM's manufacturing systems operation in Boca Raton, Fla. A bevy of other experienced managers was added during the year, including the former head of Tektronix's Design Automation Group, Peter Strong.

With its transition complete, the corporation now is targeting two of the fastest growing segments of American industry: industrial automation and defense systems. For the first time, the company is positioned to draw on the computer capabilities of its Electronic Systems Group across all areas of its business.

80
APOLLO COMPUTER INC.

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Chelmsford, MA 01824
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Only a few years ago it was common practice for design engineers in the aerospace industry to come to work at 5 a.m. in order to get time on the company's crowded CAD system. In contrast, today's designers conceivably could have access to their own CAD systems, as well as to facilities for developing software and playing around with artificial intelligence concepts—all through a single system called the computer workstation.

Judging by the performance of Apollo, the concept is catching on fast: Apollo's revenues in five years have gone from zero to $215.9 million in 1984, and the company is ready for even more dramatic growth. At year-end it had installed 10,000 workstations and by this spring it had shipped another 2,000 to 3,000.

Apollo workstations derive most of their power and all of their communications capabilities from a proprietary local area network. Domain (for Distributed Operating Multi-Access Interactive Network) consists of a set of dedicated superminicomputer nodes and the communications software.

Until this month, the company had been selling the workstations with its implementation of the Unix System 3 version with a 4.1 extension. It now will be using what it calls Domain/IX, an implementation of the Berkeley 4.2 version of Unix System 5 with some additional Apollo features. The company also sells graphics and database management software, as well as its own version of the Lisp artificial intelligence software.

Still, software is not Apollo's forte, nor should it be. The company sells 65% of its products to oems, who incorporate their own applications software. The remaining 35% is sold directly to scientific and engineering users. Apollo competes largely with Digital Equipment Corp. and other minicomputer makers with strong oem divisions, although IBM is expected to turn its attention to the scientific workstation field within a year to 18 months.

To help control its growth and to prepare for an imminent confrontation with the computer colossus, Apollo last summer brought in Thomas Vanderslice, formerly president and ceo of GTE, to run the company. Apollo cofounder John William Poduska Sr. is still the firm's chairman. Since coming on board, Vanderslice has instituted five-quarter forward planning and controls for providing better customer support. Service has, in the past, been a problem area for Apollo: the firm has even admitted to delivering computer systems without manuals and sometimes without line cords.

81
DYSAN CORP.

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Santa Clara, CA 95050
(408) 988-3472

The crowded disk-memory business is thinning out. Stiffening competition, changing technology, and recent wild market gyra-

tions, especially in personal computers, have made failures and mergers commonplace.

So it wasn't too shocking last October when two Silicon Valley disk companies announced plans to merge, even though the survivor, Xidex Corp., of Sunnyvale, Calif., with 1984 revenues of $178.2 million, was smaller than its competitor, Dysan Corp., of neighboring Santa Clara, with $214 million in 1984 revenues. (DATAMATION's ranking is based upon Dysan's 1984 performance.)

When the merger was completed last February it created a $390 million company, one that will now hold 18% of the market for flexible media, very close to number one Verbatim, now a unit of Eastman Kodak.

Xidex and Dysan each manufactured 8-, 5¼-, and 3½-inch media. Dysan also made rigid disks, disk packs, and cartridges as well as media for high-capacity Winchester disk drives. Dysan held a 30% share of the rigid-disk market, an activity that will account for a quarter of the merged firm's revenues.

Both firms also had software duplicating services, but with centers in the U.S., Canada, France, and Australia, Xidex claimed it was the world's largest. Xidex also claimed to be the second largest manufacturer of microfiche readers in the world and to hold a sizable share of the market for computer-output microfilm.

The merger has given the new company a leadership position in a fast-changing, volatile market. It enables the two merged firms to combine volume production economies with the strong sales organization that had been built by Dysan. The new company will have a combined total of more than 2,000 retail dealers and distributors and a direct U.S. sales force in 23 U.S. offices.

Xidex will be operated by a three-man office of the president, headed by Lester L. Colbert Jr., who was president of Xidex. Dysan's president, William L. Harry, won't be part of the president's office. He will run the rigid-disk division as a vice president.

82
CAP GEMINI SOGETI

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The French services companies are by far the most active in Europe, and the Continent's biggest mover on that scene is Paris-based Cap Gemini Sogeti, which had another strong year in 1984. Revenues rose to $206 million (FF1.8 billion), up 27% in local currency. The company's 16% boost in income to $10.9 million is also in marked contrast to the overall poor showing of the French dp services industry.

Cap Gemini's activities outside France now account for 56% of group revenues; Europe contributes 29%, while the remaining 7% comes from the U.S. subsidiary Cap Gemini DASD. Last year's growth was particularly strong in Western Europe. In the States, revenues didn't grow as much as they did the year before, although they were still substantial.

Last year the company's efforts in the field of videotex services started to pay off, both in France and in a number of other European countries. Already responsible for developing France's electronic telephone directory service, Cap Gemini made a bid for the corporate market with its Multitel videotex software.

The company, which also touted its videotex expertise abroad, won a major contract from the Norwegian PTT to design and install a public videotex system in conjunction with Tandem Computers. Other smaller contracts in the corporate videotex sector were signed in Sweden and Germany. Videotex now accounts for 10% of the company's domestic business and roughly 5% of total worldwide revenues.

Cap Gemini also had considerable success with its Multipro software development system, winning a major $6 million deal with one of France's biggest banks, Banque Nationale de Paris. The company is marketing Multipro in the U.S., but so far only on a trial basis.

The company's strength in the European software and services market has recently been recognized in six projects that are part of the European Commission's Esprit R&D program. The projects are primarily in the fields of software engineering, artificial intelligence, and expert systems.

Chairman Jacques Stern's strategy of new product launches, technical cooperation with other vendors, and improvements in customer support seems to be paying off.

83
INFORMATICS GENERAL CORP.

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(818) 887-9040

For the past five years, Informatics General has been getting rid of unprofitable operations in an attempt to boost the software company's margins to the industry average of 12%. It accelerated that activity in 1984, selling off its Data Services remote computing operation and three other software services in the apparel industry, life insurance business, and MRP software. It acquired software for the construction and legal fields.

Then it reorganized the company into two business units. (It once consisted of 22, and last year had eight.) The two new units were Informatics Systems and Informatics Applications. The Systems group, which includes software products and custom programming services, places Informatics General as a one-stop shopping center for corporate progamming. Its Applications group bundles software for accounting, construction, distribution, insurance, and legal markets. These newly aligned units will exchange sales leads and other resources. This operation will account for half of total revenues.

Along the way, the company dismissed president Bruce T. Coleman and replaced him with Walter F. Bauer, cofounder, chairman, and now ceo of the 22-year-old software company.

Although the company reported 1983 revenues of $197 million, these were restated to reflect the discontinued operations. In 1984, the company's revenues were $191.1 million compared with the restated 1983 figure of $152 million. The restated net income showed a decline from $8.5 million in 1983 to $4.7 million in 1984. Informatics expects 1985 to be a better year, owing to a strong performance by its Micro/Answer product line, which enables users of microcomputer software to access databases on mainframes.

The company has been building a dealer base of value-added resellers and by the end of 1985 expects to have 150 in place. Previously, its 50 vars sold only accounting software; now they'll represent all of the firm's applications software.

Despite low profits in 1984, Informatics sees good times ahead because of the reorganization and the judicious pruning of unprofitable operations. At the end of 1984, in fact, employees were wearing lapel buttons that read: "1 billion by 1990." Nobody was wearing a button that explained how this will be done.

84
NBI INC.

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When Tom Kavanagh left Storage Technology Corp. 11 years ago to start NBI Inc., the company's name supposedly meant "nothing but initials"—and word processing. As recently as five years ago, Kavanagh, who is still the firm's president, believed that NBI's surest strategy was in word processing—nothing but—and that it had to remain separate from data processing.

That, of course, has changed, as did the office. Systems that integrate all office functions are in big demand. Two years ago NBI's profits plummeted 58% when the company was caught with nothing new to integrate the office automation functions. But the company succeeded in developing and marketing products for the office systems market.

By the end of 1984, NBI's profits were up 314% to $14.5 million, based on revenues of $191.1 million.

NBI brought out a line of office automa-

tion systems called OASys. One of the systems in the line allows users of IBM Personal Computers to attach up to 100 PCs to NBI systems in an office network. The company also introduced two pcs of its own—the OASys 4100S and 4100X.

It also brought out the OASys 4000SC word processing system for secretaries and clerks. One feature allows the system to convert files that are used on MS/DOS NBI personal computers into word processing documents or vice versa.

Last fall NBI added OASys Mail, an electronic mail and document distribution system. It has added software to serve the legal profession with a product called Juris-NBI. Last year the company established a technical products group and merged it with Integrated Solutions Inc., San Jose, which makes Unix operating systems products. The new technical products division began shipping its first product, a Unix workstation for engineers, later in the year. The system uses the Berkeley 4.2 enhancements to Unix.

With about 170 salespeople in 42 offices in the U.S. and Canada, and 81 dealers and 54 distributors in 16 nations, NBI still feels it must enlarge its marketing activity. Late last year it acquired Commercial Office Products Co., Aurora, Colo., a large office supplies distributor. Negotiations to acquire Computer Consoles Inc., a Rochester N.Y., supplier of computer and telephone systems for offices, fell through early this year, however.

85
QUOTRON SYSTEMS INC.

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Los Angeles, CA 90066
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As several big potential competitors lurk in the wings, Quotron Systems Inc., Los Angeles, continues to hold a commanding 70% of the fast-growing business of supplying electronic stock quotations and other computer information services to brokers and financial institutions.

Its 1984 revenues of $189.7 million were a healthy 23.4% above the $153.8 million reported a year ago. Its income, however, rose only 12.1% to $26.8 million over 1983, sharply lower than the 41% increase in 1982. Much of the lower earnings increase was due to the company's steps to prepare for competition, particularly the introduction of the Quotron 1000, a Motorola 68000-based central processing unit that will add considerable dp features to those its older Q800 system could offer.

Nevertheless, financial observers wonder if the company is too small to remain independent in a business that it is about to share with many heavyweights. One approaching competitor is Merrill Lynch & Co., the brokerage firm that has been Quotron's largest customer, providing about 25% of its business. Merrill Lynch formed

CIRCLE 77 ON READER CARD

a joint venture with International Business Machines to offer a similar product called International MarketNet (IMNET), to be marketed in the third quarter.

Quotron chairman and ceo Milton E. Mohr thinks Quotron can prosper without hooking up with a wealthier suitor. First of all, he says, the company has a product—the model Q1000—that is a couple of years ahead of any rival product. The Q1000, in addition to providing all of the stock and commodity quotes, business news, order processing, and interoffice messages that were offered with the Q800, offers such office automation features as word processing, database management, and electronic mail. By early this spring the company had shipped 73 systems.

Quotron was formed in 1959 to offer stock quotation services, but, with a mere 6% of the market, almost went into bankruptcy in 1970. Mohr took over and guided the firm to its present dominant lead.

86
GERBER SCIENTIFIC INC.

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South Windsor, CT 06074
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H. Joseph Gerber borrowed $3,000 in 1948 to bring out a product he'd designed two years earlier as a student at Rensselaer Polytechnic Institute—a variable scale used to proportion design elements such as curves.

It became the predecessor to a vector photoplotter, a device used to design printed circuit artwork and in the manufacture of tooling production and of documentation. Improvements to the product and the addition of related systems in the computer aided design and manufacturing (CAD/CAM) field gave his company, Gerber Scientific Inc., a record year in 1984—one in which revenues rose 38.1% to $189.7 million and earnings rose 108.8% to $23.6 million. (Its 1985 fiscal year, which ended April 30, was also likely to set records, according to Gerber, who still runs the company as its president.)

Through in-house research and from selective acquisitions, the company in the last three years has been coming out with new CAD/CAM offerings for use in businesses that have big needs for factory automation. This includes aerospace, furniture, footwear, automotive, electronics, construction, printing, and sign making. It has set up four operating subsidiaries, each focusing on a particular market.

The largest operating subsidiary, Gerber Scientific Instrument Co., or GSI, aims at the electronics and graphic arts industries. Its newest product is a plotter controller with a 100% increase in memory capacity over its predecessor. The company last year paid $6 million for EOCOM Electronic Systems Division of Hoechst Capital Corp., Tustin, Calif. EOCOM makes laser-based imaging products for creating newspaper printing plates, exposing printed circuitboard artwork, and direct imaging of printed circuit boards. It does in raster form what Gerber's original plotting product did in vector form.

GSI also introduced a video digitizing system called the VDS 2500 that allows designs, which probably exist only as engineering drawings, to be incorporated into a CAD database for design changes that can then be transferred to a CAM system.

Another subsidiary, Gerber Garment Technology Inc. (GGT), acquired R.F.N. Systems Inc., Bellevue, Wash., a move that led to the introduction of the Gerbermover, a computer-controlled device for designing shoes that, among other features, allows quick decisions on introductions of new color and styles.

87
NOKIA ELECTRONICS

P.O. Box 780
SF-00101 Helsinki, Finland
(358-0) 05671

In the elegant saunas of Finland's capital, Nokia executive got all steamed up last year about the hottest division in their

Heart disease or stroke can cheat you out of the best years of your life.

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company. Nokia Electronics' dp revenues rose to $181 million (M1.09 billion) in 1984, a hike of 29% in local currency.

The Nokia group is the largest privately owned company in Finland, manufacturing everything from rubber boots to high-tech components. The Electronics Division, which accounts for about 37% of Nokia's $1.5 billion 1984 revenues, is split into four major groups. Nokia Data concentrates mainly on selling Honeywell Bull computers in Finland. Nokia Information Systems manufactures terminals and microcomputers. Nokia Telecommunications handles public transmission systems, while Nokia Industrial Automatization peddles factory systems and machine tools. Nokia also has a controlling interest in Sweden's Luxor, which makes consumer electronics products and microcomputers.

Finland, which is Nokia's most important dp market, provides 60% of revenues, with the remaining 40% coming from other Scandinavian countries and West Germany. In addition to its local mainframe and mini base, Nokia also has a strong pc and terminal business. The Finnish firm has made a name for itself in point-of-sale (POS) systems. The company's banking terminals are used by many of Finland's large banks.

These low-end products, as well as Nokia's development capability, enticed Northern Telecom into inking a major oem deal with the Finnish company in 1983. That agreement began to bear fruit last year, when the Canadian company began selling its Vienna office systems, which couple its PBX with Nokia workstations.

Nokia, which clearly understands that a Finnish firm cannot make it alone, has set up cooperative deals with many other dp firms. In addition to its deals with Bull and Northern Telecom, the company also has pacts with three U.S. firms—Convergent Technologies, robotics company Unimation, and Symbolics Inc. Under the Symbolics agreement, Nokia will distribute the 3600 Lisp workstation in Scandinavia under the new name of MindWare. So this year, with an R&D budget of about $40 million and a series of international tie-ups, a new Scandinavian contender seems to be entering the high-tech hothouse. Nokia will have to increase its export volume way above the current 40% level, however, if it really wants to bloom in the dp field.

88

INTEL CORP.

3065 Bowers Ave.
Santa Clara, CA 95051
(408) 987-5090

Intel Corp. stormed into 1984 like a police tactical squad raiding a bookmaking parlor. The firm's revenues and net income increased 45% and 71% respectively. Revenues were $1.63 billion as opposed to $1.11 billion for 1983. Net income for 1984 to-

tained $198.2 million, up from $116.1 million the preceding year. While these numbers appeared pleasing at first glance, there was a down side to the chip maker's fortunes. Supply had at last exceeded demand.

As they did for many microprocessing mavens, Intel's orders slowed dramatically in the fourth quarter ending Dec. 31. Net income for that period dropped to $23 million from $47 million in the same period in 1983. Revenues totaled $416 million, compared to $332 million for the same period a year earlier, and down from $432 million in the third quarter of 1984.

"The extremely strong market for semiconductor devices that Intel enjoyed through the first half of the year collapsed near year-end, with orders well below shipments and extensive cancellations and rescheduling of backlog," was how chairman and ceo Gordon E. Moore explained Intel's troubles. Moore added that the firm was still game, spending $180.2 million in R&D in 1984, as opposed to $142.3 in 1983. Intel had also done a lot of hiring as the year closed, with 25,400 employees, up from 21,500 workers as 1983 ended.

From a technological standpoint Intel ended the year with a strong networking winner, the 82588 Personal Workstation LAN Controller. The 1Mbps to 2Mbps chip is an enhanced version of Intel's 82586 LAN coprocessor, which supports the 10Mbps Ethernet local area network. Intel is clearly banking on the 82588 for leadership in the Starlan networking scheme backed by such power players as AT&T, AMD, DEC, and Xerox. Likewise, Intel is clearly counting on a 2Mbps LAN product from IBM, in which the 82588 will play a key role.

As Intel continued its strong commitment to CMOS technology, it announced a number of related business agreements in 1984. The firm signed a technology exchange agreement with Harris Corp., wherein both will collaborate on a CMOS design for a new analog-to-digital voice processing circuit to enhance partitioning of high- and low-voltage functions for interfacing telephone lines, PBXs, and central office switching systems.

Intel transferred the manufacturing tooling for its 80186 microprocessor to AMD as part of a technology exchange. It also entered into a licensing agreement with Oki Electric Industry Co. Ltd.; the latter will manufacture and market CMOS versions of the 80C86 and 80C88 16-bit chips, CMOS versions of Intel's 8-bit 8085A chip, and the 8-bit 80HC48, 49, and 50 series chips.

89
UCCEL CORP.

Uccel Tower, Exchange Park
Dallas, TX 75235
(214) 353-7100

Uccel would like to be known as a "pure software company," says its chairman and ceo, Gregory Liemandt. In 1983 he was lured from the presidency of General Electric Information Systems Co. to rescue the 21-year-old software company founded as a service bureau by Sam Wyly in Dallas.

With Wyly at the helm, the company—then called Wyly Corp.—had a reputation as a highflier for nearly a dozen years, although its moneymaking business was in computer software and services. In recent years that business was done through a subsidiary known as University Computing Company (UCC). The company had dabbled in manufacturing, telecommunications (it formed Datran in the early 1970s), and casualty insurance (it acquired Gulf Insurance to feed huge gobs of money to the Datran operation). All of these operations either were sold off or folded.

Wyly (Uccel) lost $7.8 million in 1982 and just scraped through 1983 with a minuscule profit of $219,000. In 1984, its net of $12 million was helped by a $4 million tax credit from tax-loss carryforwards. Nevertheless, real promise was shown with revenues of $173.4 million, compared with $152.9 million the year before.

Although its UCC operations had fallen behind in updating the financial software it had been providing the nation's leading banks, nobody was all that worried at UCC because it was about the only major supplier with which banks could deal. Aided by money from its majority stockholder, Carael Holding AG in Zurich, the company invested $20 million in a four-year research program, called Leading Edge Applications Project (LEAP), that would cut the cost and time needed to write and maintain software and enhance its reliability. Uccel's best customers, the banks, would be the first to benefit, said chairman Liemandt.

Uccel also reorganized personnel, replacing seven of the 12 top officers. The timesharing services operation was trimmed in order to concentrate on software. The services business is becoming less and less important and won't even account for a quarter of the company's revenues in 1985.

Last May, Liemandt took the final step in disassociating the company from Sam Wyly by changing the firm's name from Wyly Corp. to Uccel (pronounced u-sell).

90
SCICON INTERNATIONAL LTD.

49 Berners St.
London W1P 4AQ, England
(44-1) 580-5599

Scicon, a wholly owned subsidiary of the U.K. oil group British Petroleum (BP), had plenty to celebrate early this year. Britain's largest services company toasted its 25th birthday and its best-ever year in 1984. Chief executive Warren Werblow saw revenues leap by 29% in local currency last year to £130 million ($173.3 million).

Unlike many other European companies, Scicon has revenues that are truly international. The largest part of the company's business is done in France through its local subsidiary, Groupe Français d'Informatique, which reported sales of $40 million.

At home in the U.K., the company saw sales rise to $33 million, which is on a par with the company's other main subsidiary, Scientific Control Systems in West Germany. The company does have a Middle East division called Scicon Arabia, mainly because of its involvement with BP and the oil industry, but most of the remaining business comes from the U.S. Here, Scicon bought Systems Control Inc. in 1981 for $10 million. A sister company was then set up—Systems Control Technology Inc.—so that Scicon could pitch for U.S. defense contracts without falling foul of American technology transfer regulations.

Last year, Scicon added satellite communications specialist Telecom General Corp. to its U.S. portfolio. Telecom General sells data communications on the Satnet system owned by Associated Press.

In Britain, meanwhile, BP has been deemphasizing Scicon's telecom interest. The services firm was responsible for BP's stake in private telecom carrier Mercury, set up to compete with local PTT British Telecom. Last year, however, BP decided it didn't want to stay involved with Mercury and sold its 40% stake in the venture.

Scicon was still looking for U.K. investments last year, and bought a small software house called Message Workshop. The company specializes in process planning computer systems for the engineering and textile industries.

Commercial products are very much on Scicon's mind at the moment. Revenues are largely gained from government, military, and industrial contracts. The company has not exploited the international market for products to any great extent. As a result, a separate subsidiary called Sisco was set up to seek out products from within the company and to develop them for international markets. This year, Scicon hopes to put that strategy to greater effect and continue its expansion in local and international software markets.

91
COMPAGNIE INTERNATIONALE DE SERVICES EN INFORMATIQUE

35 Boulevard Brune
75614 Paris, France
(33-1) 545-8000

Last year the fun and games ended for Compagnie Internationale de Services en Informatique (CISI) when it was forced to face up to the harsh economic realities of the dp services business. Fed up with CISI's continuing losses, its parent, the French Atomic Energy Commission, axed its chairman and called for a complete re-

structuring of the company.

CISI has actually been running in the red for years. Although its 1984 dp revenues of $171.6 million (FF1.5 billion) were up, the company reported a loss of $11.5 million last year.

In both 1983 and 1984, foreign operations accounted for two thirds of the losses. Half of those losses were attributed to CISI-Warton Econometric Forecasting Associates, which CISI acquired in early 1983.

CISI's foreign activities represented 35% of its total revenues. Parent AEC is by far its biggest single customer, accounting for more than 20% of the company's overall business.

Until 1982, CISI's foreign side had been the most profitable part of the company's operations. The slump in the timesharing trade caused the French firm's fortunes to go into reverse. The foreign subsidiaries are being severely pruned back.

AEC's most daring move was to transfer CISI chairman Patrick Nollett, who had managed the company since 1972. Nollett, who now heads CISI's foreign activities, predicts that the international markets will still generate over 30% of group revenues in 1985.

The new chairman of CISI is Henri Cantegreil, who was formerly in charge of a smaller but profitable French service company. Cantegreil supervised the separation of CISI into five autonomous operating divisions. Another unit has been established to oversee all foreign business, with the exception of CISI-Wharton, which remains a separate entity. The U.S.-based CISI-Wharton is hoping for happier days now that it has sold its loss-ridden timesharing subsidiary, Proprietary Computer Systems. CISI itself is also hoping its stateside subsidiary can get back in the black and push it into profitability.

92
CENTRONICS DATA COMPUTER CORP.

1 Wall St.
Hudson, NH 03051
603-883-0111

Centronics produces a broad line of computer printers for original equipment manufacturers, but for quite a while it has been unable to produce a profit. Last year was no exception: net loss was $4.5 million on revenues of $171.5 million.

During 1984, Centronics management completely reorganized the company, centralizing control. President and chief operating officer John R. Morrison explained the move this way: "The reorganization streamlines the company, delineates clear lines of command, and reduces duplication and effects efficiencies." Shortly after this move, things began looking better.

The first bright spot for Centronics occurred in July, when the company introduced its new line of dot matrix printers. The seven new products range from a $299 near-letter-quality, IBM-PC-compatible printer to a quietized, 800-lines-per-minute band printer. When Printer Systems Corp.—which had been a customer of Centronics' largest competitor—signed a multimillion dollar purchase agreement, market acceptance of these products appeared secure.

This order could mean the end of the red ink in Hudson, New Hampshire. The company responded in early 1985, by announcing an agreement to acquire—for about 170,000 shares of common stock—Trilog, Inc. a manufacturer of line matrix printers. Hopefully, absorbing this acquisition won't take management's eyes off the bottom line for too long, so that Centronics stays on the right track.

93
MICOM SYSTEMS INC.

20151 Nordhoff St.
Chatsworth, CA 91311
(818) 998-8844

When Micom Systems Inc. announced its acquisition of Interlan Inc. of Boxborough, Mass., wedding cake temporarily replaced the ice cream, onions, and oranges Micom

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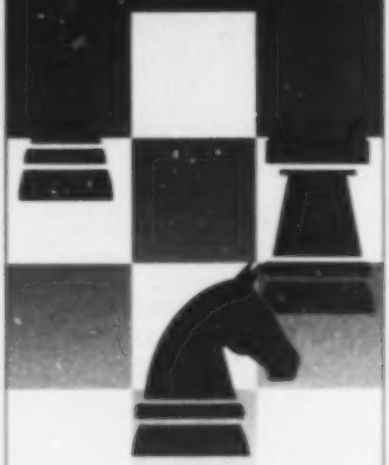

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usually uses to promote its line of data communications equipment. Though the early 1985 event could hardly be called a shotgun wedding, there was an almost immediate offspring: a LAN integrating a data PABX from Micom and cable-based technology from Interlan.

Micom had lots to celebrate in 1984. The company finished another record-breaking year with revenues up 50% to $171.4 million and profits up 38.8% to $25.4 million. Sales were stronger in the United States than abroad. Domestic sales increased 62% while international sales increased 44%. The company blames an unfavorable currency exchange for the slower performance overseas.

Events contributing to Micom's banner year include a contract with AT&T to supply data concentrators and continuing strong demand for the company's line of protocol converters. Also, management has decided to expand cabling services and products from Instanet Cable (formerly Kertech) from a regional operation to one that is national in scope.

Product introductions included the Instanet/Plus, which combines Micom's Instanet LAN—a twisted-pair, low-speed system based on its Micom 600 data PBX—with Interlan's Net Plus, a high-speed Ethernet-type cable system. The company also enhanced the Micro600 data PABX and introduced new modems.

Micom made progress strengthening the distribution side of its business. Its mail-order business continued to grow and accounts for 18% of net sales. LAN products represented 30% of total sales. The backbone of the business is still remote data communications products, primarily, data concentrators and modems, which contributed 46% to total sales.

94
VERBATIM CORP.

323 Soquel Way
Sunnyvale, CA 94086
(408) 245-4400

Competition in the media market pushed Verbatim over the edge during 1984. In the six-month period ending in December, the floppy disk maker lost $9.2 million. For the whole year, revenues were up to $168.9 million, but these produced a loss of $2 million. Verbatim chairman John R. Anderson, who owned about 19% of the company, decided to cash in his chips. He found a receptive audience at Eastman Kodak Co., which had recently announced its entry into the media arena. Kodak offered about $175 million for Verbatim's outstanding shares, and the two companies were set to merge.

Kodak wasn't buying a thriving operation. Verbatim's main line of business is sales to oems, which totaled 54% of sales during fiscal 1984. Verbatim was hurt during the year when a large customer changed designs and reduced orders. Oems were also hit by the slowdown in micro sales: they ordered less media and paid less for what they did order.

As its market was getting tougher, Verbatim was in the midst of a big expansion of production facilities, as well as increased research and development projects. R&D expenses were running 16% ahead of 1983, and administrative expenses were running rampant at 42% ahead of 1983.

Kodak, which is the world's largest producer of photographic products and has annual sales of over $10 billion, will allow Verbatim to operate as a subsidiary. There's no doubt, however, that some changes will be made to bring the new subsidiary back into the profit column before long.

95
CPT CORP.

8100 Mitchell Rd.
P.O. Box 295
Minneapolis, MN 55440
(612) 937-8000

New product delays and slow shipments of older products contributed to CPT Corp.'s disappointing balance sheet in 1984. Revenues slid down $13.3 million to $168.4 million but profits crashed by 68.6% to $5.4 million. In 1983 the company's dramatic growth had slowed, and in 1984 growth came to an end.

After several years of successfully marketing OA equipment to small businesses and offices, the Minneapolis-based company is having to compete more and more with IBM and Wang. CPT lost a battle with Wang to sell $16 million worth of office automation equipment to the Tennessee Valley Authority. The competition has put pressure on pricing. Three years ago a CPT word processor retailed for $18,000. Today that same piece of equipment sells for $8,500.

CPT introduced several new products in 1984, but was late shipping them. Introductions included the CPT Phoenix, a workstation that integrates word, data, and graphic processing. The Phoenix was plagued by delays in software development. A multi-user system called the SR545 was also introduced along with Office Dialog, a software option for the Office Dialog System that provides full-text search and retrieve capabilities to workstations connected to the system. Other software products introduced include the Interactive Display Emulator and the 3270 SNA connection, and Teletex, an international communications protocol. The vendor still supports the 8500 line of multifunction workstations but revenue growth didn't increase at the same level unit sales did.

Today, 85% of CPT's sales come from North America, with the bulk coming from the U.S., and 5% come from Europe. Lately, though, those sales have been a little

harder to come by. It seems that as CPT moves away from its traditional niche in small businesses and IBM and Wang target the little guys, CPT will face more aggressive competition.

96
NORSK DATA AS

Olaf Helsetsvei 5
P.O. Box 25
Oslo 6, Norway
(47-2) 295-400

At home in Norway, national minicomputer maker Norsk Data has the nickname "The Millionaire Factory." Strong growth and healthy profits over the last few years have helped Norsk create more local millionaires than any other Norwegian company—many of them employees of the firm since its early days in the late '60s.

Everything came up roses for Norsk Data again in 1984. Revenues shot up to around $166.7 million (Kr1.36 billion), a 54% increase in local currency. Norsk's earnings per share also grew by 35% to around $2, pleasing shareholders around the world. The company's stock is traded in Norway, Sweden, Britain, and in the over-the-counter market in the U.S.

The bulk of Norsk's revenues come from its minicomputer range, which includes the Satellite, a small 16-bit machine, a larger version called the Compact, and the ND-500 family of 32-bit superminis. All models are controlled by the same Sintran III operating system.

Around 50% of Norsk Data's revenues are generated in Norway, a small market with only 4 million inhabitants. Another 20% of its revenues comes from the rest of Scandinavia, 15% from the U.K. and Western Germany combined, and about 7% from the U.S.

Last year company president Rolf Skar made a determined effort to expand business through acquisition and collaboration. In France a collaborative agreement was signed with the giant French electronics company, Matra. The dp division, Matra Datasysteme, will produce and sell Norsk Data minis under its own label.

In Germany Norsk had already bought the lackluster German computer manufacturer, Dietz Computer. Early last year the Dietz products were replaced by Norsk Data's. The German company's Technovision CAD/CAM system is now being converted to run on Norsk's ND-500 computers.

Norsk Data also got together last year with Britain's Racal Electronics to develop artificial intelligence software for the ND-500 supermini. The joint venture's first task is to develop systems for the offshore oil industry—an industry in which both Norway and the U.K. are heavily involved.

With fast-climbing revenues, Norsk Data is hoping to overcome its only real weakness—the lack of internationally marketable software products.

97
TELEVIDEO SYSTEMS INC.

550 E. Brokaw Road
San Jose, CA 95112
(408) 971-0255

The winds of change that buffeted Silicon Valley in 1984 dumped a bit of unpleasantness upon premier terminal maker Televideo. Revenues were down by 3.4% to $163 million, from $168.7 million posted in 1983. Earnings were off a whopping 80%—$4.5 million, as opposed to $22.4 million in 1983.

The firm's diminished showing had much to do with its entry into the microcomputer market, an arena dominated by IBM. In an attempt to tie part of its fortunes to the mainframe monolith, Televideo introduced the Personal Mini in late 1984. This device allows IBM PCs and PC compatibles to be networked together in a distributed processing mode. Driven by Intel 80186 and Zilog Z80A chips, the machine supports up to eight PCs or 16 PC workstations, has a proprietary InfoShare operating system, and comes with a 40MB Winchester drive and 256KB of RAM. By year's end, Televideo had announced one large con-

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tract: the People's Republic of China had ordered more than $10 million worth under a three-year agreement.

Unlike some in the valley who failed to augur the signs of trouble, Televideo underwent a fast and early retrenchment by closing several facilities and consolidating others as it perceived the truism that a shoemaker is best advised to stick to his own last.

While it soft-pedaled the micro market, Televideo bided its time with a variety of traditional offerings that included the TP 750, its first daisywheel printer. The company is also banking on pushing a line of ergonomically packaged ASCII terminals. Televideo also introduced the 922 terminal, which is compatible with the DEC VT 220 and VT 52 devices. The company began its penetration of the DEC marketplace in 1983 when it introduced the 970 terminal.

98
GENERAL DATACOMM INDUSTRIES INC.

Middlebury, CT 06762
(203) 574-1118

Last year proved to be the most successful year in General DataComm's 15-year history and marked its debut in the DATAMATION 100. Revenues increased more than 67% in 1984 for this vendor of data communications and networking products.

The divestiture of the Bell System helped boost corporate revenues to $161.2 million in 1984 from $96.3 million last year. Profits were up $7 million to $12.6 million. GDI inked deals with Bell Atlantic, Ameritech Communications Inc., GTE Communications Corp., NYNEX Business Information Systems Co., Bell South Services Inc., and the Sonecor Systems division of Southern New England Telephone.

The company considers its markets divided into three parts: business systems, domestic telecommunications, and international. Last year, GDI's business systems sales contributed approximately 55% to revenues with an additional 30% from international sales (mostly in Canada), and 15% from sales to the Baby Bells.

Citing "growth in a controlled fashion," the company underwent a major reorganization in 1984. General DataComm Industries Inc. became a holding company with several subsidiaries, most important of which are General DataComm Industries Inc., which performs commercial work (the bulk of its business), and General DataComm Systems Inc., which serves government contracts. Through the systems division, products are supplied to the Department of Defense, NASA, and other government agencies.

Along with the reorganization, GDI moved from Danbury, Conn., to its new headquarters and technology center in Middlebury, Conn. Last year its engineering department grew by 50% and the number of employees rose to 2,030 from 1,470. The company plans to create new production facilities in nearby Naugatuck, Conn.

The company, which does most of its business in the United States and Canada, increased its research and development spending from 7.1% to almost 11%. New product introductions included enhancements to its 212 modem line, including its 2,400bps modem, the 2412; the Netcon-6 network management system; and software enhancements to the Megamux high-speed, high-capacity, wide-band multiplexor.

99
PLANNING RESEARCH CORP.

1500 Planning Research Dr.
McLean, VA 22102
(703) 556-1000

Celebrating its 30th anniversary made 1984 special for Planning Research Corp., but its birthday gift was mixed news: even though revenues continued to climb, hitting $324.3 million for the year, earnings dropped to $7.2 million in 1984 from $11.3 million in 1983. There was no trouble on the dp side of the business: data processing revenues grew to $161.2 million, up from $135 million in 1983.

The bad news came from PRC's Engineering division, which provides professional services in engineering, architecture, and construction management. This subsidiary had been doing a lot of work in the recession-hit Middle East, and by the first quarter of PRC's fiscal year '85—which ended in September of 1984—the damage was already done. Management announced in its quarterly report that "In early October, a management review determined that the division very likely would be unable to collect an unexpectedly large number of accounts receivable, requiring revenue adjustments and reserves for these accounts. Both management and procedural changes have been made in the division to help assure that such problems do not recur."

In the dp arena, things were going much better. PCR's Government Information Systems obtained a $7.1 million, one-year extension to manage and operate NASA's Scientific and Technical Information Facility, which the company has run since 1980. In addition, the government group was awarded a $289 million contract for the U.S. Department of Commerce's Patent and Trademark Office. This contract runs for 18 years, and will pay between $15 million and $30 million during each of its early years.

One of PCR's newest ventures also got a boost during 1984. This is PRC's Realty Systems, which serves the real estate industry with computer based multiple-listing systems, and publishes computer generated listing books for use by real estate agents. This group produced a 70% increase in operating income during fiscal 1984, despite coming out with a new product during the year. LoanExpress provides automated information on available mortgages and rapid processing of loan applications.

100
LOTUS DEVELOPMENT CORP.

161 First St.
Cambridge, MA 02142
(617) 492-7171

A growth rate of 196% vaulted Lotus Development Corp.'s revenues to $157 million and into the DATAMATION 100. Net income was also up an impressive 151% to $36 million. That's not bad for a company's second year of operation. The first year was pretty amazing: sales went from zero to $53 million, with net income of $14.3 million.

Lotus makes the popular software package Lotus 1-2-3, which combines spreadsheet analysis, graphics, and information management for personal computers. Since 1-2-3 was the company's first and only product, it produced all of 1983's revenues.

Lotus was quick to begin work on its next product. In February 1984, Symphony was announced. Television commercials conveyed the message that Symphony was the encore to 1-2-3. The package integrated word processing, communications, filing, spreadsheet, and graphic capabilities. It was a little tougher than Lotus had anticipated, however, for Symphony to win acceptance in the marketplace.

Within a few months of Symphony's introduction, Lotus announced a new marketing plan to allow other software companies a peek into Symphony, hoping to inspire Symphony-based products.

Wall Street analysts were quick to point out that this was the same tactic that IBM had used when developing its PC, and if the strategy worked for Lotus, it could end up making Symphony the industry standard. Founder and president Mitchell Kapor said, "The fundamental idea was to build Symphony with lots of windows and doors to the outside world."

Shortly after the Symphony marketing change, Lotus announced another new product, this one for the Apple. Called Jazz, it is a business software product aimed at turning Apple's Macintosh into a business machine. Jazz is to be an integrated software package that includes word processing, spreadsheets, a database management system, graphics, and communications. The product was considered by analysts to be necessary for both Lotus and Apple. The Macintosh certainly needed more software to combat IBM's PC, which has Lotus 1-2-3, Symphony, and just about everything else. Lotus needs new products in order to avoid the one-product syndrome epidemic in the software world. Results, however, are mixed. While optimism surrounds Jazz, Lotus was unable to meet the target dates for its introduction.